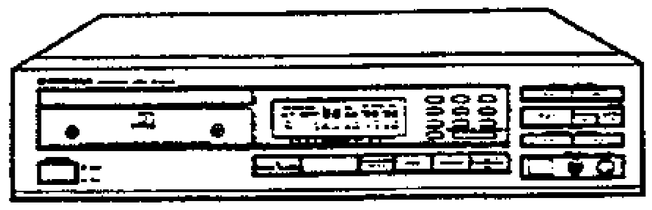
PIONEER
The future of sound and vision.

Service Manual



ORDER NO.
ARP1516

COMPACT DISC PLAYER

PD-5100
PD-4100

MODELS PD-5100 AND PD-4100 HAVE SEVEN VERSIONS :

Type	Applicable model				Power requirement	Export destination
	PD-5100	PD-5100-S	PD-4100	PD-4100-S		
KU	○	–	○	–	AC120V only	U.S.A
KC	○	–	○	–	AC120V only	Canada
HEM	○	○	○	○	AC220V.240V (switchable) *	European continent
HB	○	–	○	○	AC220V.240V (switchable) *	United kinglom
SD	○	–	○	–	AC110V.120 – 127V.220V.240V (switchable)	Kingdom of Saudi Arabia and General market
SD/G	○	–	–	–	AC110V.120 – 127V.220V.240V (switchable)	U.S.Military
HP	○	–	○	–	AC220V.240V (switchable) *	Australia

* Change the position of jumper of the Transformer board assembly.

- This service manual is applicable to the KU, KC, HEM and HB types.
- For the PD-5100/KC, HEM and HB types, please refer to pages 76.
- For the PD-4100/KU, KC, HEM and HB types, please refer to pages 89.
- For the PD-5100-S/HEM, PD-4100-S/HEM and HB types, please refer to pages 105.
- For the PD-5100/SD,SD/G and HP types, refer to the additional service manual.
- For the PD-4100/SD and HP types, refer to the additional service manual.
- Ce manuel pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

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CONTENTS

1. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1kHz
Quantized bit number: 16 bit linear
Power requirements
European models ..... AC 220V, 50/60Hz
U.K., Australian models ..... AC 240V, 50/60Hz
U.S., Canadian models ..... AC 120V, 60Hz
Other models ..... AC 110/120–127/220/240V (switchable), 50/60Hz
Power consumption 13W
Operating temperature ..... +5°C–+35°C (+41°F–+95°F)
Weight 3.9kg (8lb, 9oz)
External dimensions .. 420(W) × 315(D) × 98(H)mm
16-9/16(W) × 12-3/8(D) × 3-7/8(H)in

2. Audio section

Frequency response ..... 4Hz–20kHz (±0.5dB)
S/N ..... 102dB or more (EIAJ)
Dynamic range ..... 92dB or more (EIAJ)
Output voltage ..... 2.0V±0.3V (EIAJ)
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Number of channels ..... 2 channels (stereo)

3. Functions

- Play
- Pause
- Manual search
- Programmed playback
- Track search
- Programmed repeat
- Pause program
- Direct track search
- Direct programming
- All track repeat
- Add-on program
- Auto programmed editing
- Random play

The above functions can be operated with the remote control unit.

- Timer start

4. Accessories

- Remote control unit 1
- Size AAA/R03 dry cell batteries 2
- Output cable 1
- Operating instructions 1

NOTE:
The specifications and design of this product are subject to change without notice, due to improvements.

2. SAFETY INFORMATION

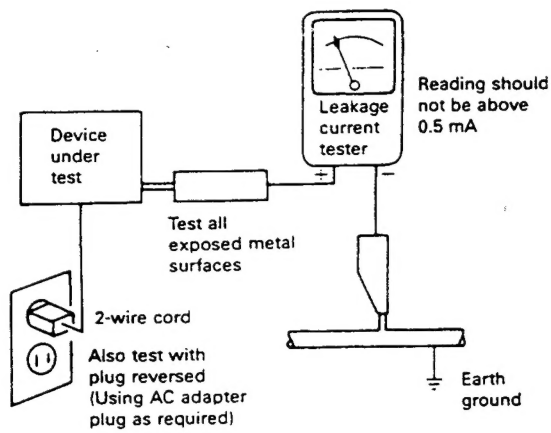
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!
LAITE SISALTAA LASERDIODIN, JOKA LAHETTAA NAKYMATONTA, SILMILLE VAARALLISTA INFRAPUNASATEILYA LAITTEEN SISALLA ON LASERDIODIN LÄHEISYYDESSA KUVAN 1. MUKAINEN VAROITUSMERKKI.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

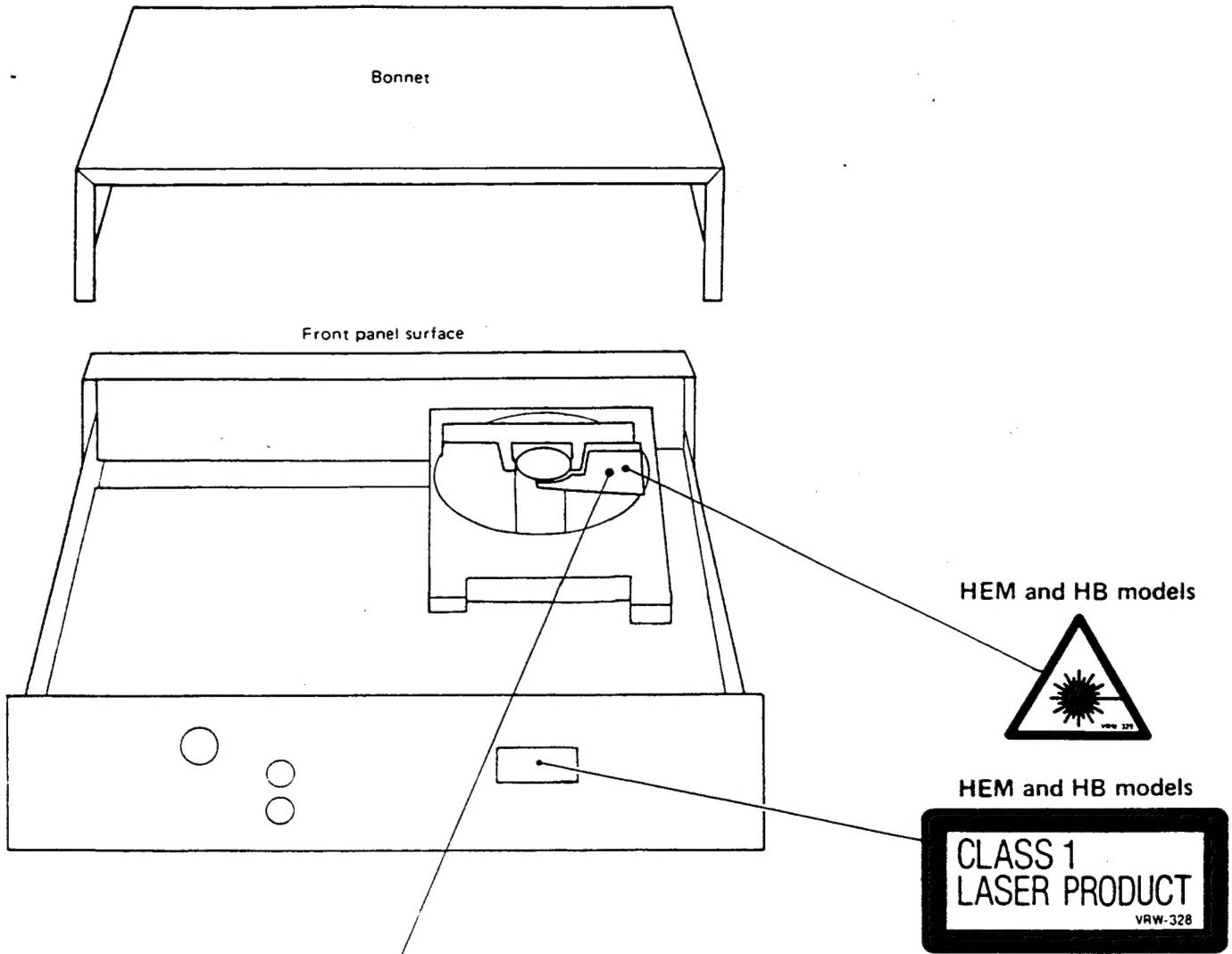
LASER
Picture 1
Warning sign for laser radiation

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

VIKTIGT
APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

LABEL CHECK



ADDITIONAL LASER PRECAUTIONS

1. Laser Interlock Mechanism
   The clamp switch (S102) detects the completion of the Load in operation, and the ON/OFF status of the clamp switch is in turn detected by the microcomputer. The laser diode is designed not to oscillate while the clamp switch is in OFF status.
   Consequently, if S102 is accidentally short-circuited, the interlock mechanism will become incapable of operation.
   Moreover, when short-circuiting occurs between Pins 4 or 5 of CXA1081S (IC 1) and GND, or between Pin 29 of CXA1081S (IC 1) and GND, or between the terminals of Q1 (a Fault Condition will occur in all three cases), the laser diode will oscillate continuously.
   Note that during TEST Mode (see page 31), the interlock mechanism does not operate.
2. While the bonnet is in opened status, if the pickup is positioned to allow direct visibility of the objective lens at the outer periphery from the outer diameter of the disc clamper (80-mm diameter), the pickup can be flooded with radiation of more than class 1 of the laser optical system during any Fault Condition in Item 1 above or during TEST Mode.

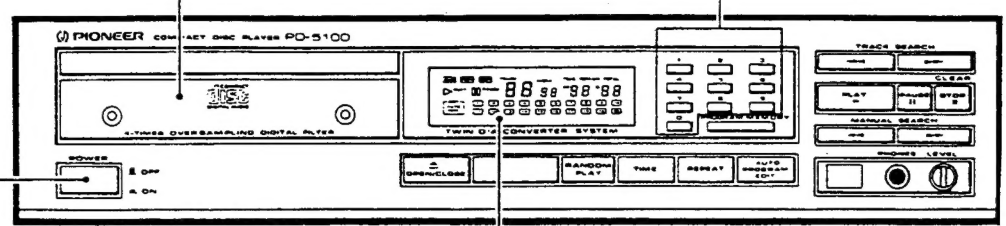
3. PANEL FACILITIES

FRONT PANEL

POWER switch
Press to turn power to the unit ON and OFF.
If there is a disc in the unit when power is turned ON, playback will begin automatically. (Timer start function)

Disc Tray
This is where the disc is set. When power is switched ON and the OPEN/CLOSE key is pressed, the tray is ejected forward.
To insert the tray, press the OPEN/CLOSE key, or lightly push the tray in with your finger. With the disc tray open, pressing the PLAY key will close the disc tray and start playback.

Track number keys (1 to 0)
- Use to specify track numbers (track 1—track 99) for selection of tracks or program entry.
- Use to specify time (in minutes), during auto program editing.



Indicators

RND : Lights during random playback.
PGM : Lights after programming (after program has been memorized).
REP : Lights during repeat play.
▷ PLAY : Lights during playback.
▯▯ PAUSE : Lights during temporarily interrupted playback.
TRACK : Displays the current track number (during normal playback and programmed playback) or the track being programmed during programming operation. The lower figures light up in accordance with the number of tracks recorded on the disc, and the numbers of the tracks which have been played are deleted in order. (During programmed playback only the programmed tracks light.)
INDEX : Displays the index * number of the music section of a track or the track division.
TIME/REMAIN/TOTAL : Changes each time the TIME key is pressed.
- TIME : Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).
- REMAIN : Displays the remaining time on the track being played.
  When the TIME key is pressed again, the remaining time on the disc will be displayed.
- TOTAL : Displays the total number of tracks on the disc (TRACK) and the overall playback time (minutes and seconds).
  During playback, the display goes on for about 5 seconds before changing to the TIME display.

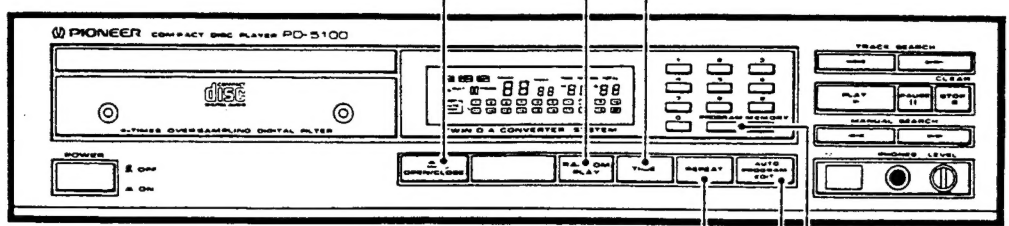
M (minute) : Displays the minutes of the elapsed time, total playback time, and remaining time.
S (second) : Displays the seconds of the elapsed time, total playback time, and remaining time.
AUTO PGM EDIT : Lights during editing.

* The INDEX is a signal which is recorded within a track to indicate division of the track into separate tunes and items of music.

RANDOM PLAY key
Press to begin random playback.

OPEN/CLOSE key (⏏)
Press when you wish to eject or load a disc. Each time the key is pressed, the tray is alternately pushed out or pulled in.

TIME key
This key selects the display mode of the indicator panel.
Each time the key is pressed, the indication changes from TIME, REMAIN, to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)

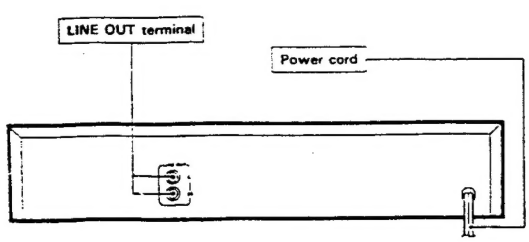


REPEAT key
Press to perform repeat playback
- If pressed during normal playback mode, all tracks on the disc will be repeatedly played back.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- In the case of random play mode, after all the tracks have been played, random play will start again.

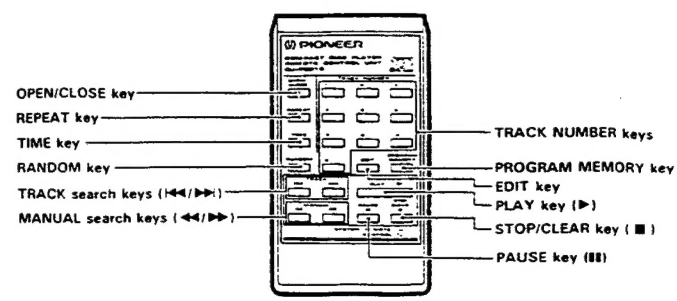
PROGRAM MEMORY key
Use to program a sequence of tracks.
- Press this key after selecting a desired track with the track number keys. Tracks will be added to the program in the order in which they are selected.

AUTO PROGRAM EDIT key
Press to program a tune which may be played back within a specified time.

REAR PANEL



REMOTE CONTROL UNIT



TRACK SEARCH keys
During normal playback, programmed playback or pause modes, these keys are pressed to search for the desired track. Pressing either key causes the player to advance to the next track or to return to the previous track. Even in stop mode, these keys can be used to select the desired track. Press the PLAY key to playback the desired track.

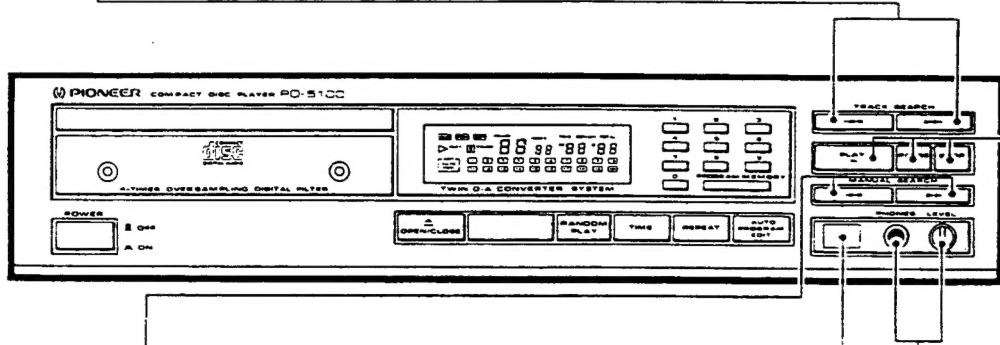
[▶▶|] : When pressed once, playback advances to the beginning of the next track on the disc; when pressed continuously, playback advances to the beginning of succeeding tracks on the disc. (During programmed playback, it advances to the beginning of the next programmed track.)

[|◀◀] : When pressed once, playback returns to the beginning of the currently playing track; when pressed continuously, playback shifts to the beginning of previous tracks on the disc. (During programmed playback it returns to the beginning of the previous programmed track.)

STOP/CLEAR key (■)
Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
Press to clear a program. When pressed during stop mode, the program stored in memory is cleared.

PAUSE key (▮▮)
Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

PLAY key (▶)
Press to begin playback, and to cancel the pause mode.



MANUAL SEARCH keys
When the player is in playback or pause modes, these keys are pressed to perform fast forward or reverse operations to allow manual searching. These operations are only carried out during the time either key is pressed.

[▶▶] : For fast forward operation. If the end of the disc is reached during fast forward operation, "End" will be displayed and the player will enter the pause mode. [During programmed playback, the player will enter the pause mode right before it reaches the next track (program step).]

[◀◀] : For fast reverse operation. If the beginning of the disc is reached during fast reverse operation, the player will enter the playback mode. [During programmed playback, the player will enter the playback mode right before it reaches the previous track (program step).]

Remote sensor

PHONES (headphones) jack
When you wish to use headphones, insert the plug for the headphones into the headphone jack.

PHONES LEVEL control knob
Use to adjust the level of sound when using headphones. Turning the knob to the right increases the sound level.

4. EXPLODED VIEWS AND PARTS LIST

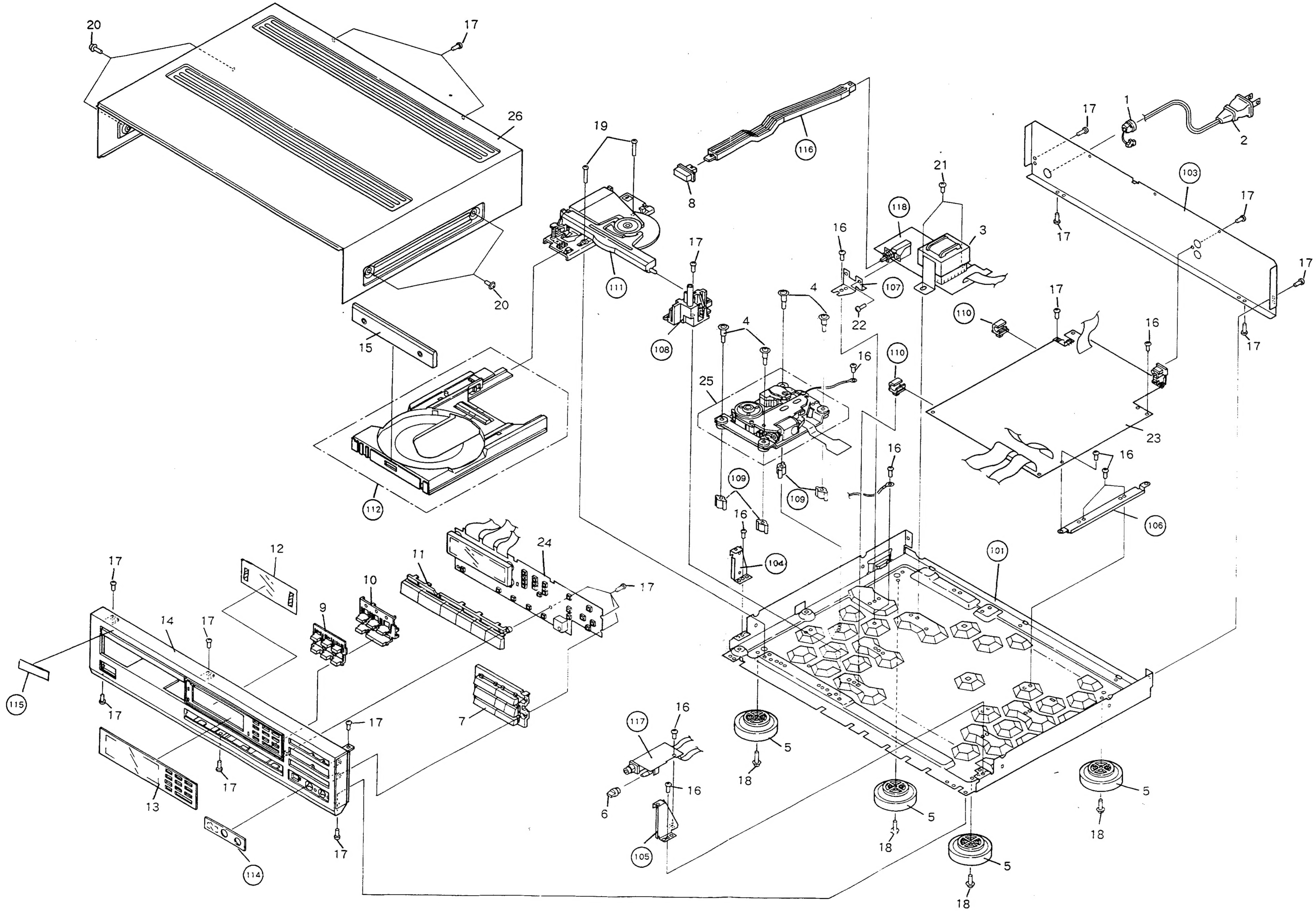
NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

4.1 Exterior

Parts List of Exterior

Mark	No.	Part No.	Description
⚠	1	CM-22C	Strain relief
⚠	2	PDG1015	AC power cord
⚠ ★	3	PTT1054	Power transformer (AC120V)
	4	PBA1001	Screw
	5	PNW1376	Insulator
	6	PAC1208	Headphone knob
	7	PAC1244	Button A (PLAY)
	8	PAC1246	Button A (POWER)
	9	PAC1247	Button A
	10	PAC1248	Button B
	11	PAC1250	Button B (O/C)
	12	PAM1230	FL filter A
	13	PAM1175	Window B
	14	PNW1356	Function panel B
	15	PNW1358	Name plate B (tray)
	16	BBZ30P060FMC	Screw
	17	BBZ30P080FZK	Screw
	18	BBZ30P120FMC	Screw
	19	BBZ30P230FMC	Screw
	20	FBT40P080FZK	Screw
	21	IBZ40P080FCC	Screw
	22	PMZ30P060FCU	Screw
◉	23	PWZ1419	Main board assembly
◉	24	PWZ1425	Function board assebmly
	25	PYY1063	Servo mechanism assembly
	26	PYY1062	Bonnet
	101		Under base
	102		• • • • •
	103		Rear base
	104		Angle
	105		Panel angle
	106		Board angle
	107		Switch angle
	108		Slide guide
	109		Mechanism support
	110		P.Plate holder
	111		Loading base assembly
	112		Tray assembly
	113		• • • • •
	114		Headphone name plate
	115		Name plate
	116		SW joint
	117		Headphone board assembly
⚠	118		Transformer board assembly

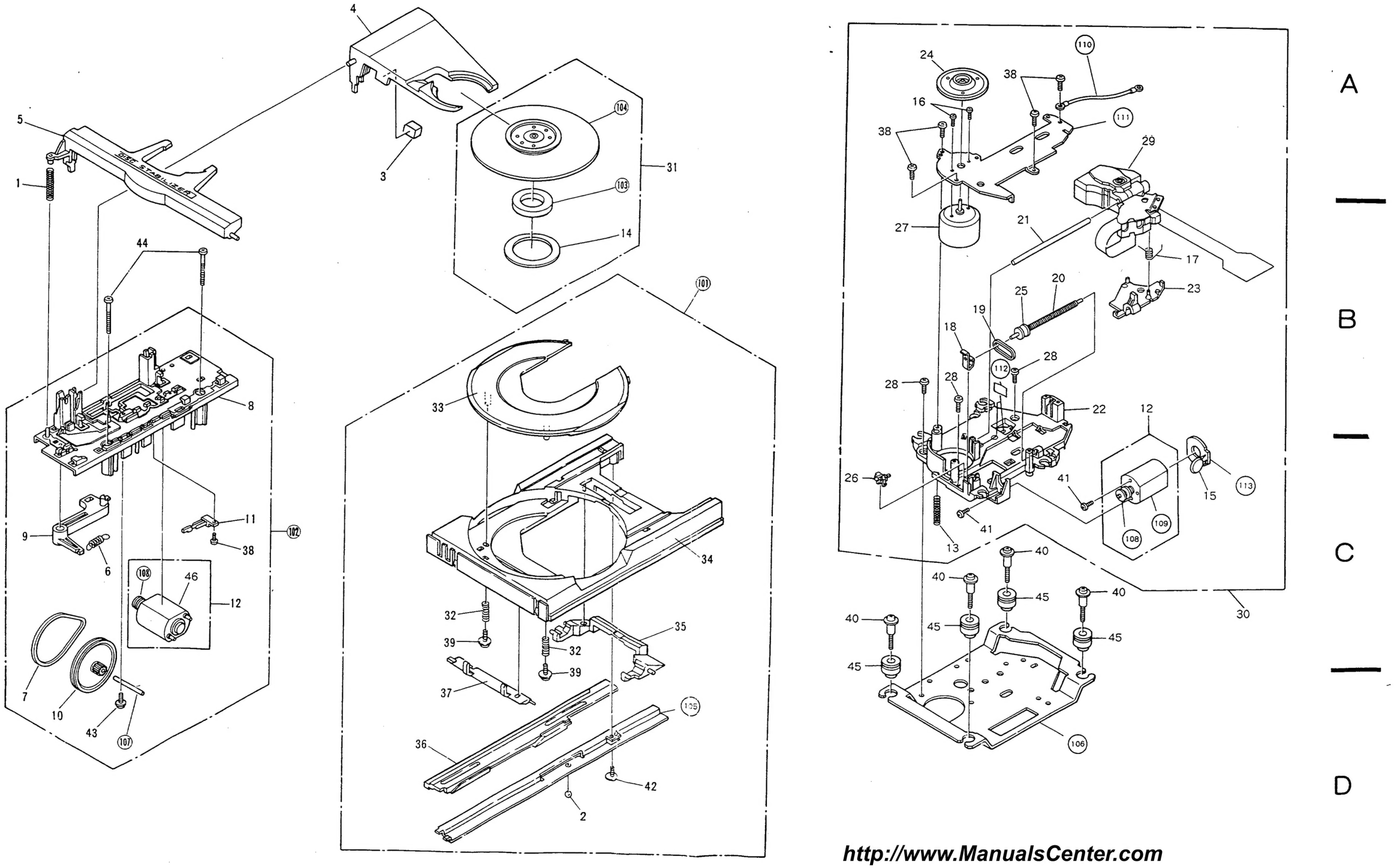
1 2 3 4 5 6



A B C D

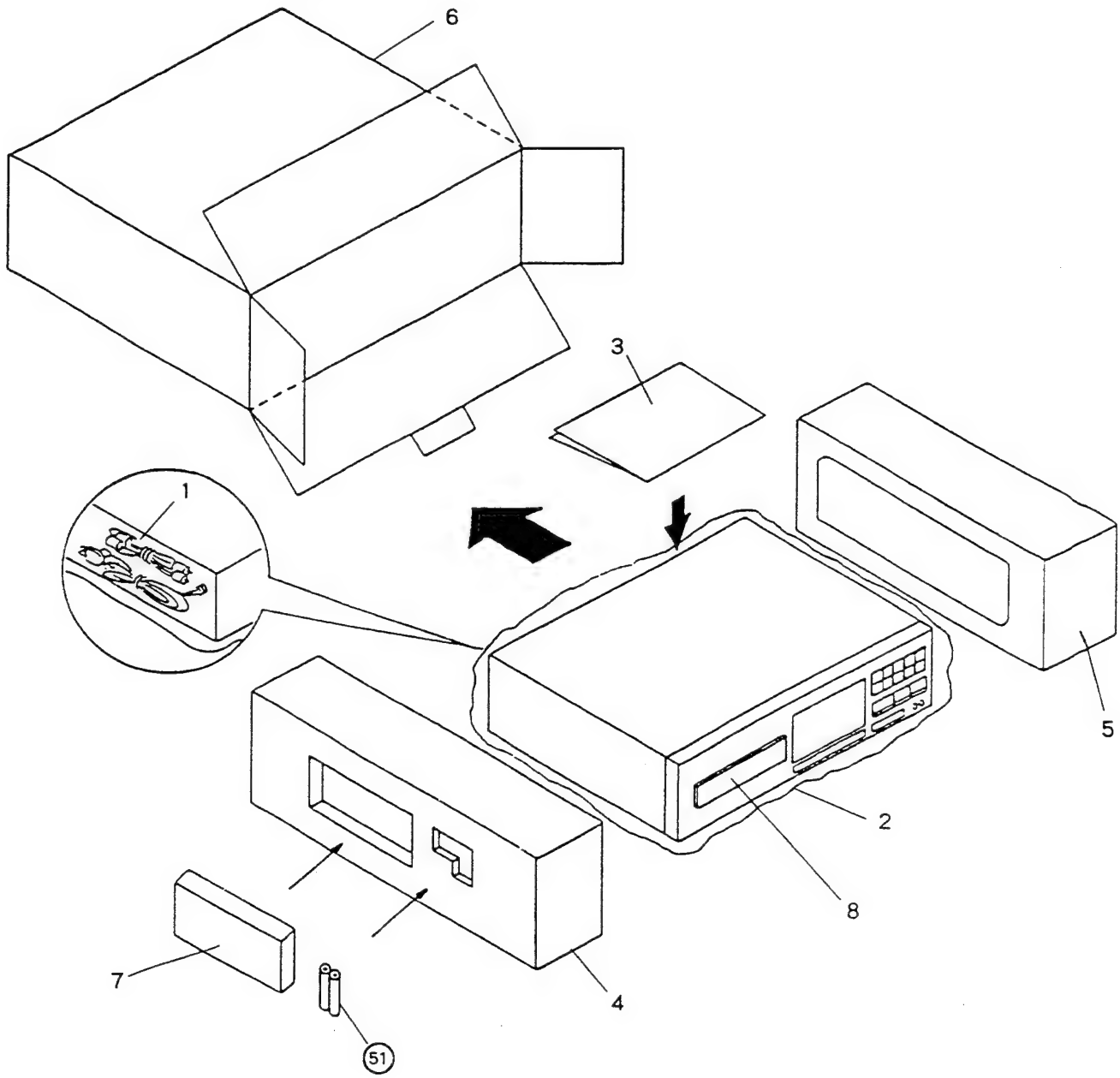
1 2 3 4 5 6

4.2 Mechanism section



5. PACKING

Mark	No.	Part No.	Description
	1	PDE1002 (PDE1001)	Connection cord with pin plug
	2	PHL1002	Sheet
	3	PRB1045	Operating instructions (Englesh)
	4	PHA1059	Protector (L)
	5	PHA1060	Protector (R)
	6	PHG1179	Packing case
	7	PWW1022	Remote control unit
	8	PHC1030	Spacer (into the tray)
	51		Battery (UM – 4)



Parts List of Mechanism section

Mark	No.	Part No.	Description
	1	PBH1013	Spring
	2	PBP-001	Steel ball ϕ 4
	3	PEB1032	Stopper rubber
	4	PNW1084	Clamp holder
	5	PNW1085	Clamp retainer
	6	PBH1012	Clamp spring
★★	7	PEB1013	Belt (LOADING)
	8	PNW1069	Loading base
	9	PNW1083	Clamp lever
	10	PNW1171	Gear pulley
★★	11	VSK-015	Leaf switch (CLAMP,S102)
★★	12	PYY1025	Motor assembly (CARRIAGE, LOADING)
	13	PBH1009	Earth spring
	14	PNM1010	Disc cushion
	15	CGDYX104M25	Semiconductive ceramic capacitor
	16	PBA-209	Screw M2 × 3
	17	PBH1008	Drive spring
	18	PBK1010	Plate spring
★★	19	PEB1072	Belt (CARRIAGE)
	20	PLA1003	Drive worm
	21	PLA1004	Guide bar
	22	PNW1062	Mechanism chassis
	23	PNW1063	Carriage plate
	24	PNW1064	Disc table
	25	PNW1066	Pulley
★★	26	PSH1003	Slide switch (INSIDE,S101)
★★	27	PXM1001	Spindle motor
	28	BBZ30P080FCC	Screw
	29	PWY1003	Pick up assembly
	30	PYY1063	Servo mechanism assembly
	31	PYY1028	Clamper assembly
	32	PBH1045	Plate spring
	33	PNW1329	Disc plate
	34	PNW1390	Tray
	35	PNW1331	Plate lever (R)
	36	PNW1332	Rack
	37	PNW1330	Plate lever (F)
	38	BPZ20P080FZK	Screw
	39	PBA1025	Screw
	40	PBA1001	Screw
	41	PMZ20P030FMC	Screw
	42	PPZ30P080FMC	Screw
	43	IPZ30P060FMC	Screw
	44	BBZ30P230FMC	Screw
	45	PEB1031	Floating rubber
	46	PXM1002	Motor (CARRIAGE, LOADING)
	101		Tray assembly
	102		Loading base assembly
	103		Magnet
	104		Clamper
	105		Slide base
	106		Ballast base
	107		Gear shaft
	108		Motor pulley
	109		• • • • •
	110		Earth lead unit
	111		Base plate
	112		Cloth tape
	113		Carriage M board

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
5	Grating Adjustment (2) (using discs with a recording time of 60 min. or more)					
	0.5V / div	5ms / div	TP1 Pin 2 (TRKG. ERR)	Grating	Null point	
				Grating	Maximum amplitude	

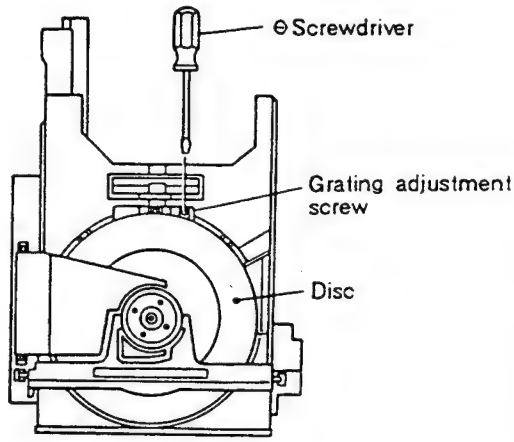


Fig. 9-9

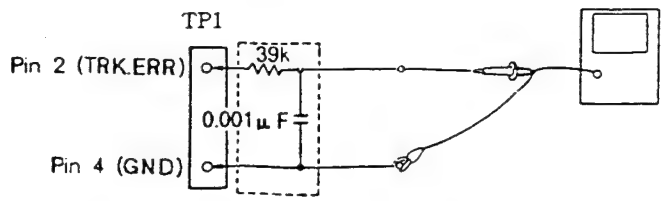


Fig. 9-10

Note: This adjustment can only be performed with a disc having pits up to R115mm, not with the Test Disc (YEDS-7).

- Put unit in the test mode (see page 31).
- Load the test disc, move the pickup to the outer periphery so that the pickup grating adjustment hole is visible from the pit surface of the disc or from the hole in the servo mechanism (see Fig. 9-9).
- Press the TRACK FWD key (▷▷|) and PLAY key (▷) in sequence to close the focus servo and spindle servo (do not turn on the tracking servo).
- Observe the TRKG.ERR (tracking error) waveform at TP1 pin 2 on an oscilloscope, inserting a 4 kHz low-pass filter (see Fig. 9-10).
- Insert a ⊖ screwdriver into the grating hole, turn and find the null point (see Photo 9-1).
- Next, slowly turn the ⊖ screwdriver COUNTERCLOCKWISE from the null point and adjust until the waveform (tracking error signal) reaches maximum amplitude (see Photo 9-3).

Note: Use caution since inserting the ⊖ screwdriver forcefully will cause the pickup unit to float upward.

- Lastly, make sure that there is no major fluctuation in the p-p voltage of the tracking error signal (do not insert the cutoff 4 kHz low-pass filter) when the pickup is moved to the inner periphery and when the pickup is moved to the outer periphery. If there is a difference of more than ± 10 % again turn the grating adjustment screw and adjust the tracking error signal to maximum.

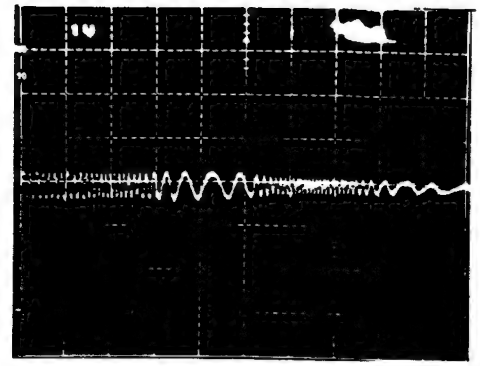


Photo 9-1 Null point

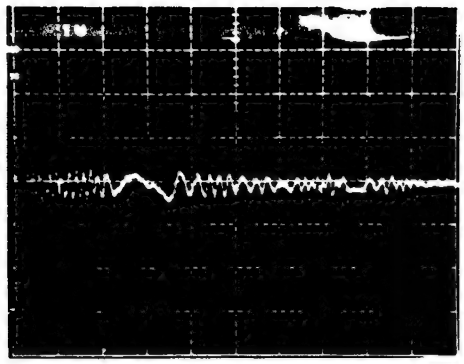


Photo 9-2 This is not the null-point waveform.

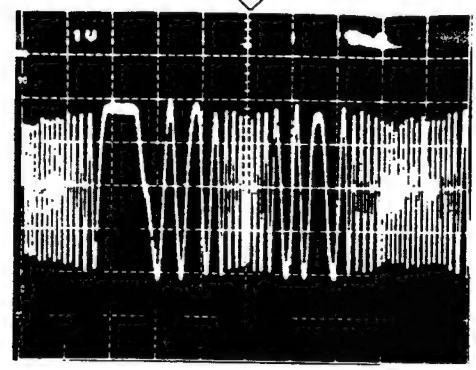


Photo 9-3 Maximum amplitude

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
6	**Tracking balance adjustment**					
	0.5V / div	5ms / div	TP1 Pin 2 (TRKG. ERR)	VR5 (TRKG.BAL)		• Load the test disc. • Put unit in the test mode (see page 31). • Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc. • Press the TRACK FWD (▷▷|) and PLAY (▷) keys sequentially to cause the disc to rotate. • Observe TP1 pin 2 TRKG.ERR (tracking error) on the oscilloscope and adjust VR5 TRKG.BAL (tracking balance) to eliminate the DC elements from the tracking error signal.
7	**Tangential adjustment**					

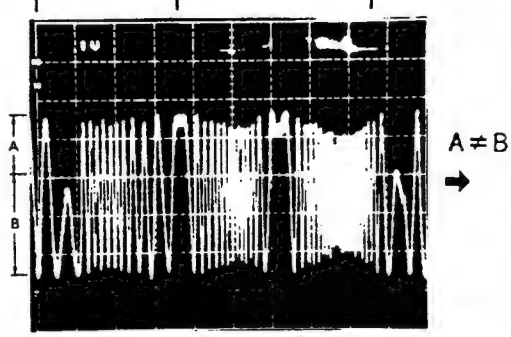


Photo 9-4 DC elements mixed in signal

A= B

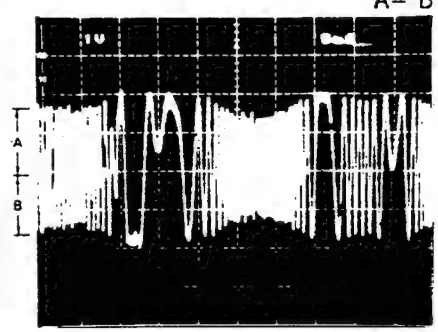


Photo 9-5 DC elements eliminated

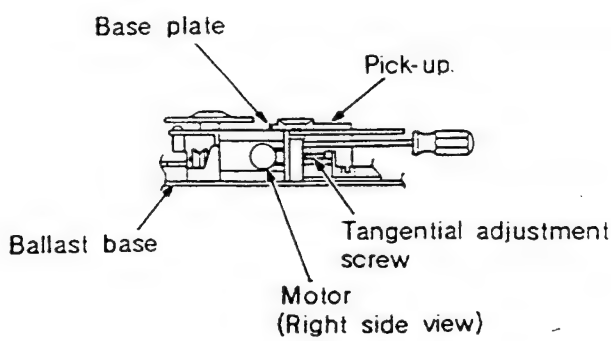


Fig. 9-11

- Put unit in the test mode (see page 31).
- Open the tray and load the test disc.
- Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc.
- Insert a hex wrench into the tangential adjustment screw section from the rear of the mechanism.
- Close the tray.

Note: Do not use an L-shaped hex wrench. Use one such as shown to the left. Using an L-shaped hex wrench can cause the tray to come loose (see page 34 5. Grating Adjustment (1)).

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
		200ns	TP1 Pin 1 RF output	Tangential adjustment screw	Sharpest possible eye pattern	• Press the TRACK FWD (▷▷|), PLAY (▷), and PAUSE (▯▯) keys sequentially to close the all servos (pause indicator will illuminate). • Observe TP1 pin 1 (RF output) on the oscilloscope and adjust the tangential adjustment screw to achieve the sharpest possible eye pattern. • The point to which the adjusting screw should be set lies about halfway between the points at which the eye pattern becomes most blurred when the screw is rotated clockwise and counterclockwise. When the whole waveform becomes clear, concentrate on sharpening the fine lines forming the diamond at the center of the eye pattern (see Photo 9-8). Adjust until the fine lines on all four sides of the diamond are both sharply defined and dense, as shown in Photo 9-6.

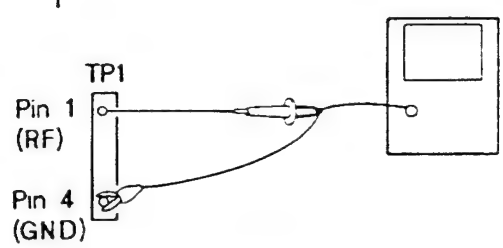
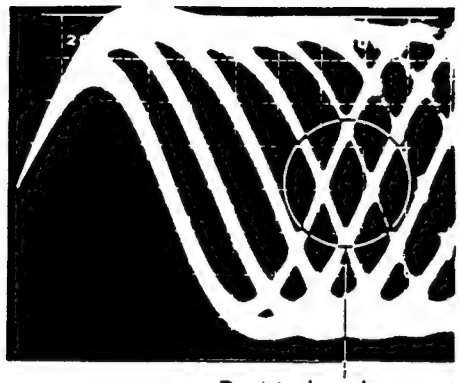
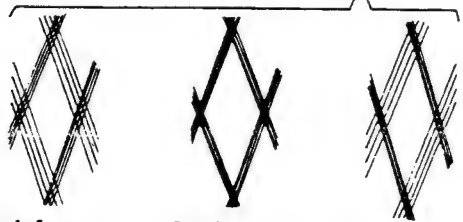


Fig. 9-12

Note: Use a hex wrench to raise the pickup somewhat while making this adjustment.



Part to be observed



Unsatisfactory | Optimum adjustment | Unsatisfactory

Photo 9-6

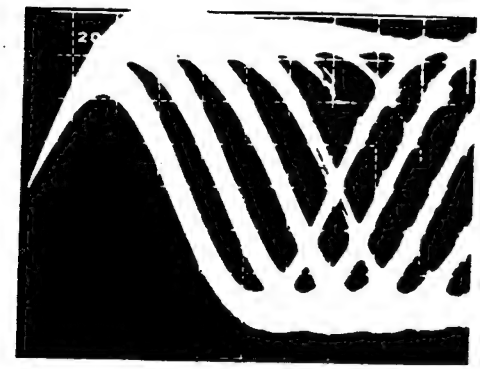


Photo 9-7

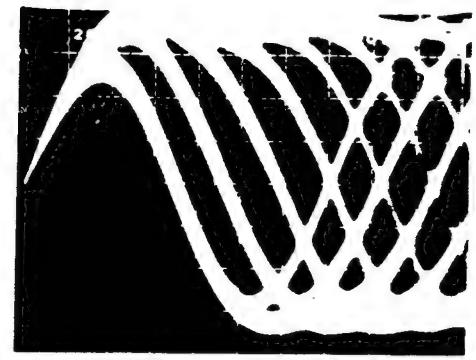


Photo 9-8

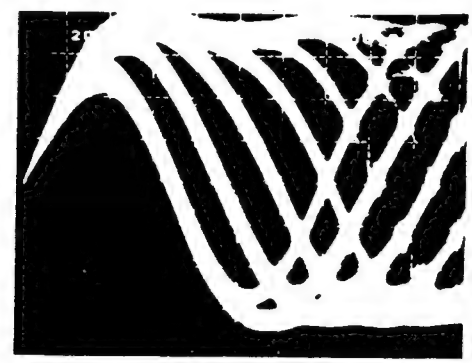


Photo 9-9

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
8	Focus gain adjustment					
	20mV / div CH1(X), 5mV / div CH2 (Y) (prove 10 : 1)		X-axis TP1 Pin 5 (FOCS. IN) Y-axis TP1 Pin 6 (FOCS. ERR)	VR3 (FOCS. GAN)	Phase difference of 90°	• With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 9-13. • Put unit in the test mode (see page 31). • Press the TRACK FWD (⊳⊳|), PLAY (⊳), and PAUSE (⊓⊓) keys sequentially to close the focus, spindle, and tracking servos. • Turn ON the power to the oscillator and set it to output a 1.2kHz 1Vp-p signal. *Note: Some oscillators discharge a DC voltage when turned on. It is therefore recommended that the oscillator be connected after it has been turned on.* • Adjust VR3 FOCS.GAN (focus gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°).

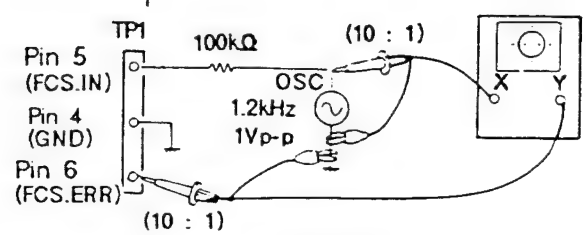
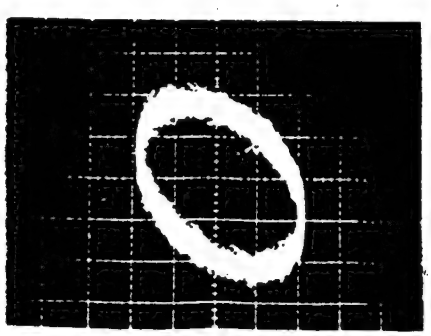
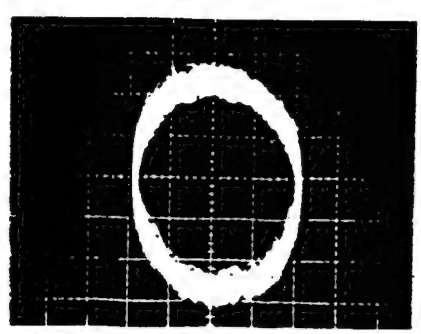


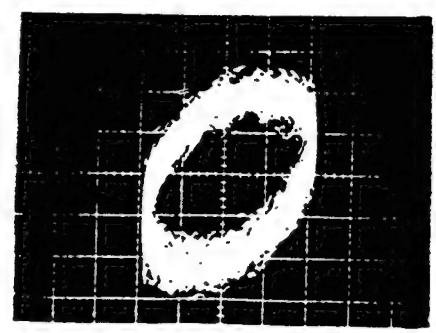
Fig. 9-13



Gain overcompensated
Photo 9-10



Gain optimal
Photo 9-11



Gain undercompensated
Photo 9-12

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
9	Tracking gain adjustment					
						• With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 9-14. • Put unit in the test mode (see page 31). • Press the TRACK FWD (▷▷I), PLAY (▷), and PAUSE (▯▯) keys sequentially to close the focus, spindle, and tracking servos. • Turn ON the power to the oscillator and set it to output a 1.2 kHz 2Vp-p signal. *Note: Some oscillators discharge a DC voltage when turned on. It is therefore recommended that the oscillator be connected after it has been turned on.*
	50mV / div CH1 (X), 5mV / div CH2 (Y) (prove 10 : 1)	X-axis TP1 Pin 3 (TRKG. IN) Y-axis TP1 Pin 2 (TRKG. OUT)	VR4 (TRKG.GAN)	Phase difference of 90°		• Adjust VR4 TRKG.GAN (tracking gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°).

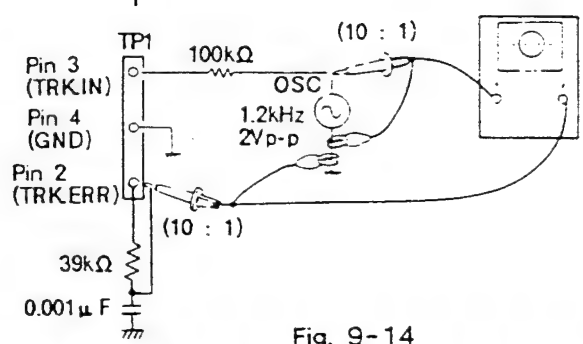
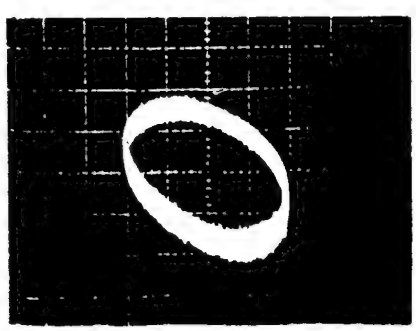
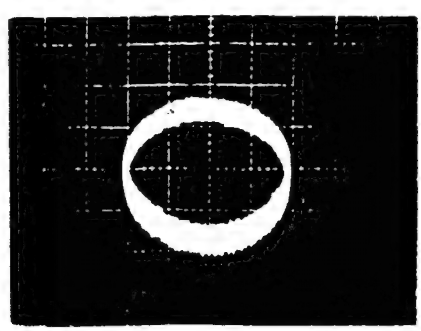


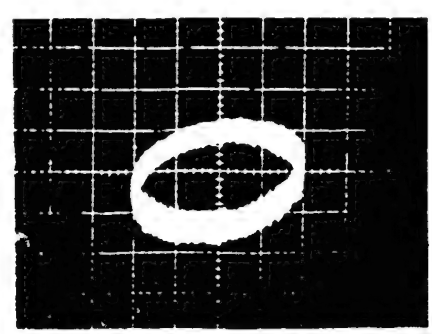
Fig. 9-14



Gain overcompensated
Photo 9-13



Gain optimal
Photo 9-14



Gain undercompensated
Photo 9-15

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
10	VCO free-run adjustment					
			TP2 Pin 2	VR8 (VCO.ADJ)	4.275 ± 0.025MHz	• Put unit in the test mode (see page 31). • Short the ASY and GND jumper with a screwdriver or similar tool (see Fig. 9-15). • Connect a frequency counter capable of measuring frequencies of 10MHz and above to TP2 pin 2. • Adjust VR8 (VCO adjust) so that the frequency counter reading becomes 4.275 ± 0.025 MHz.
11	Method for confirming focus error					
			TP1 Pin 6 (FOCS. ERR)			• Put unit in the test node (see page 31). • Ground TP1 pin 5 FOCS. IN (focus in) to GND. • Observe the waveform output by TP1 pin 6 FOCS. ERR (focus error) when the TRACK FWD (▷▷|) key is pressed.

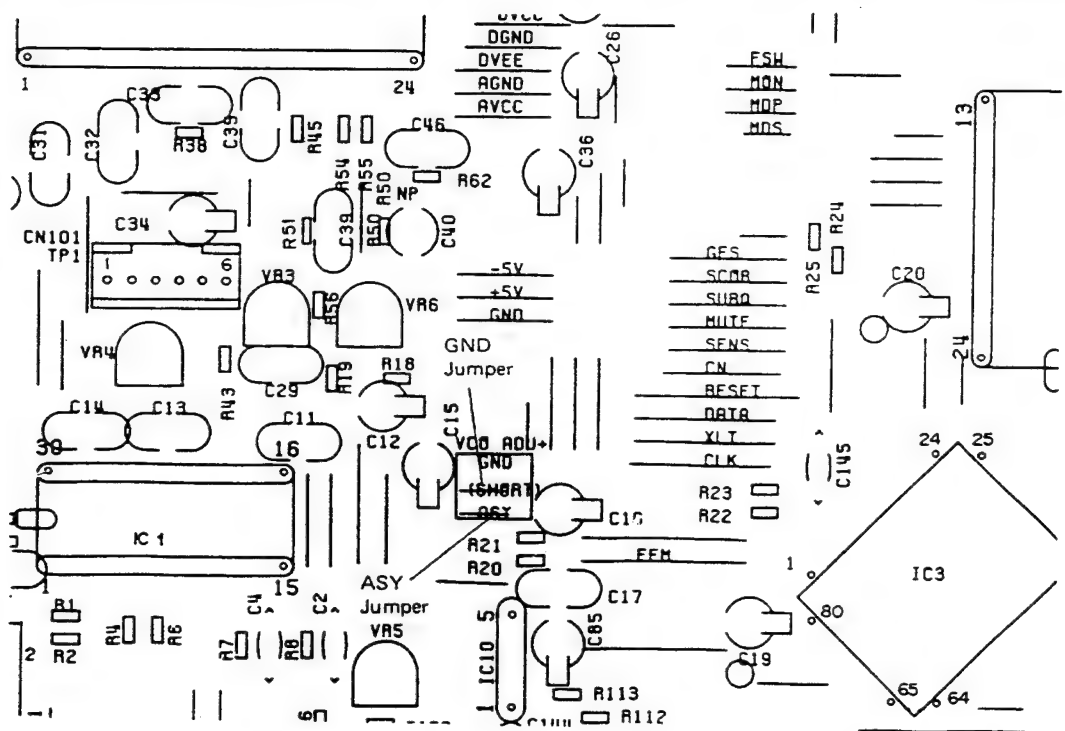
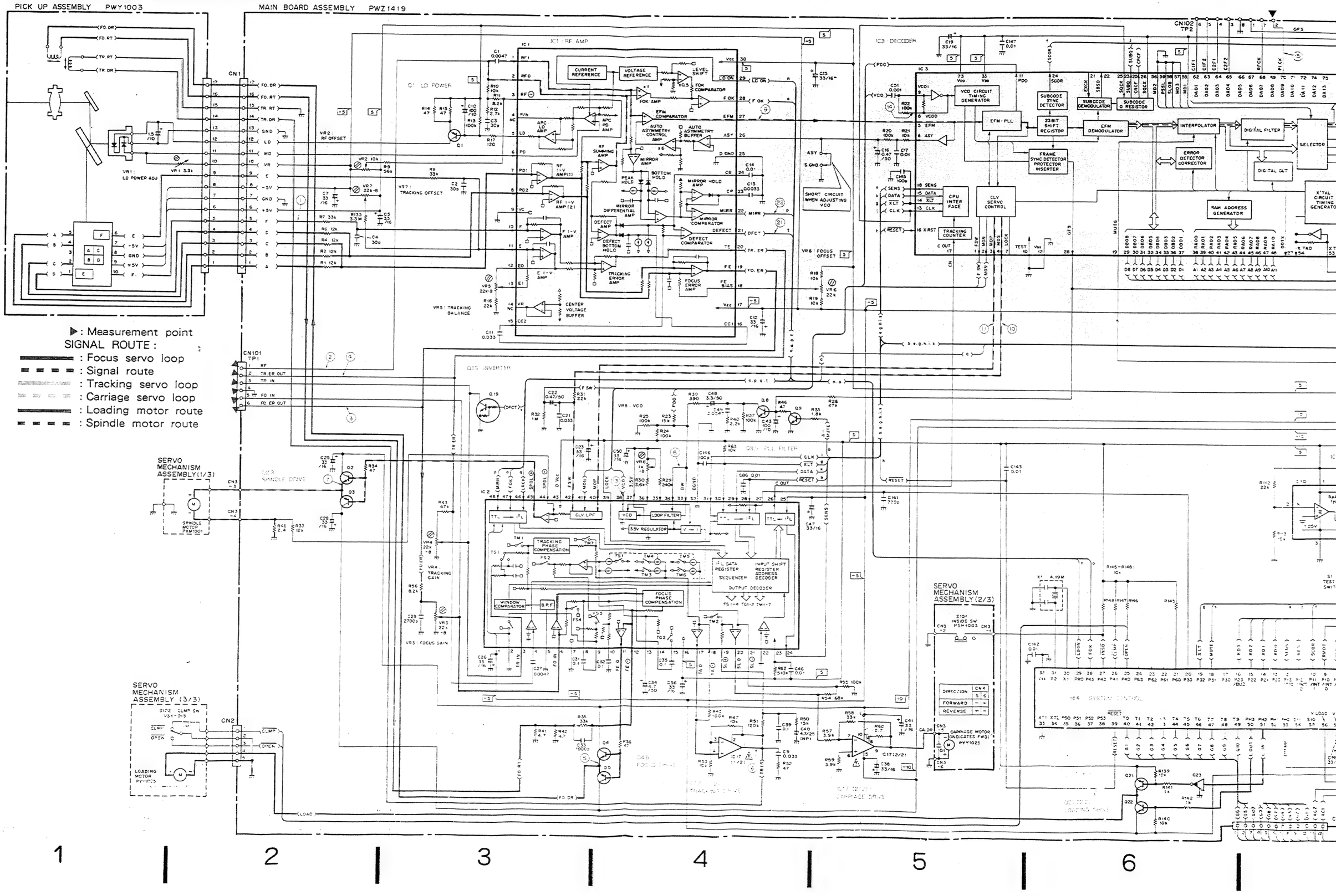
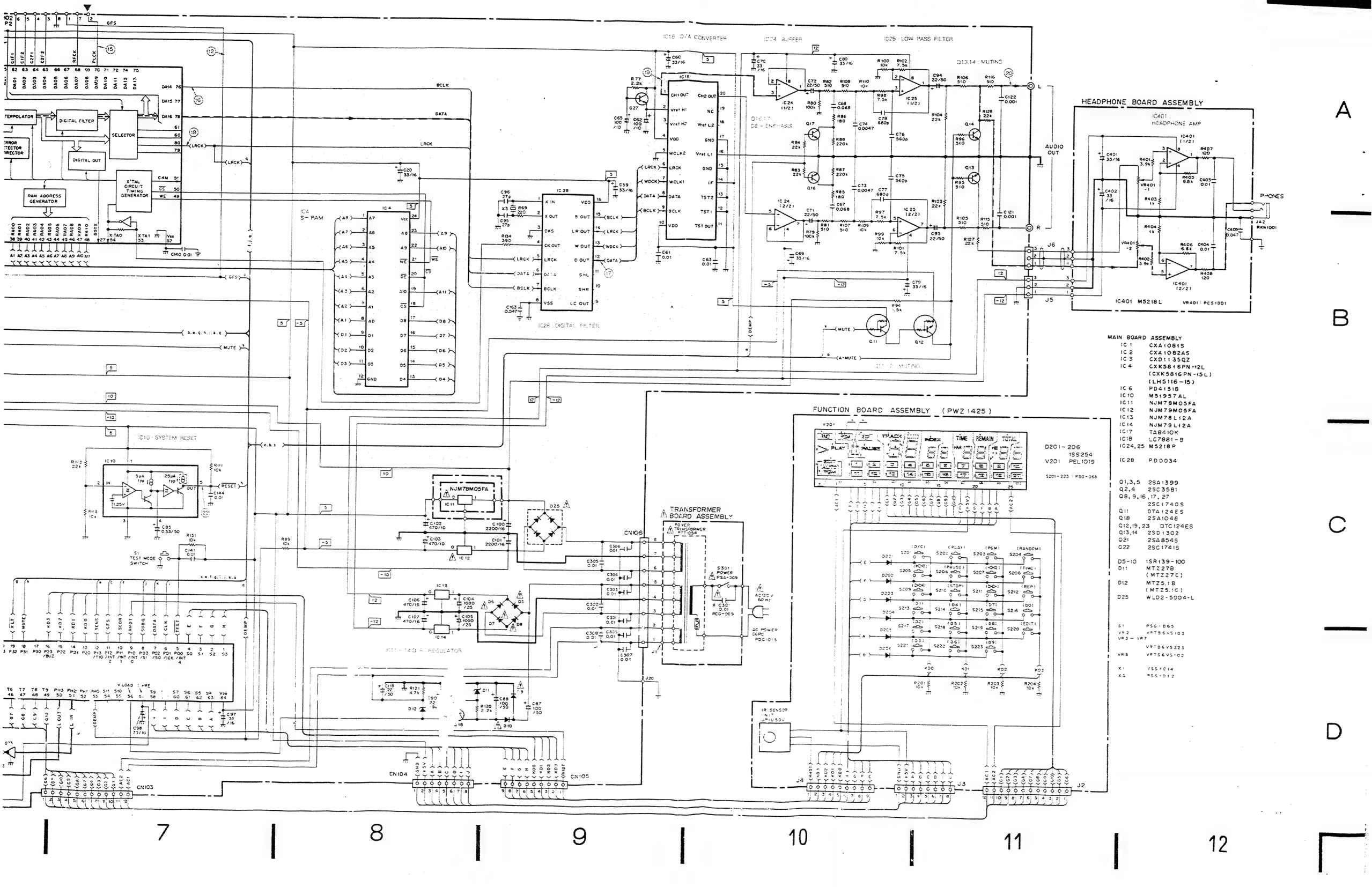


Fig. 9-15 ASY and GND Jumper position

7. SCHEMATIC DIAGRAM



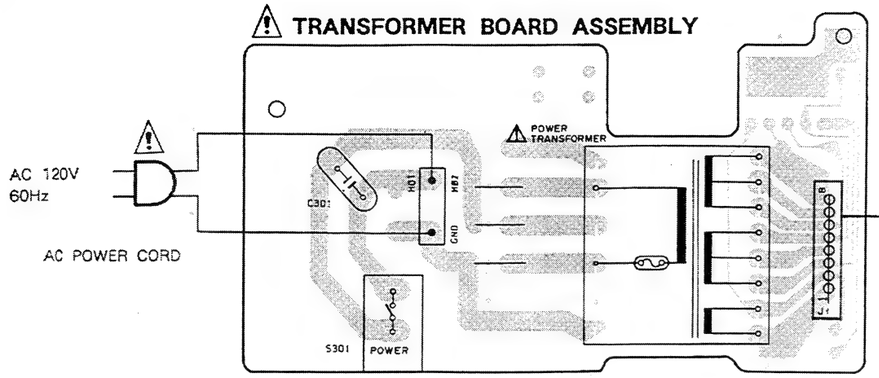


MAIN BOARD ASSEMBLY

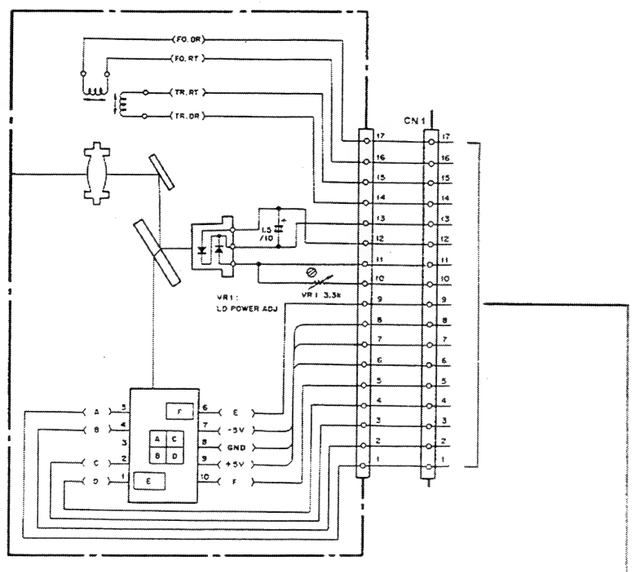
IC 1	CXA1081S
IC 2	CXA1082AS
IC 3	CXD1135QZ
IC 4	CXK5816PN-12L
	(CXK5816PN-15L)
	(LH5116-15)
IC 6	PD4151B
IC10	M51957AL
IC11	NJM78M05FA
IC12	NJM79M05FA
IC13	NJM78L12A
IC14	NJM79L12A
IC17	TA8410K
IC18	LC7881-B
IC24,25	M5218P
IC28	PD0034
Q1,3,5	2SA1399
Q2,4	2SC3581
Q8,9,16,17,27	2SC1740S
Q11	DTA124ES
Q18	2SA1048
Q12,19,23	DTC124ES
Q13,14	2SD1302
Q21	2SA854S
Q22	2SC1741S
D5-10	1SR139-100
D11	MTZ27B (MTZ27C)
D12	MTZ5.1B (MTZ5.1C)
D25	WL02-5004-L
S1	PSG-065
VR2	VRT86VS103
VR3 - VR7	VRT86VS223
VR8	VRTS6VS102
X1	VSS1014
X3	PSS-012

6. P.C. BOARDS CONNECTION DIAGRAM

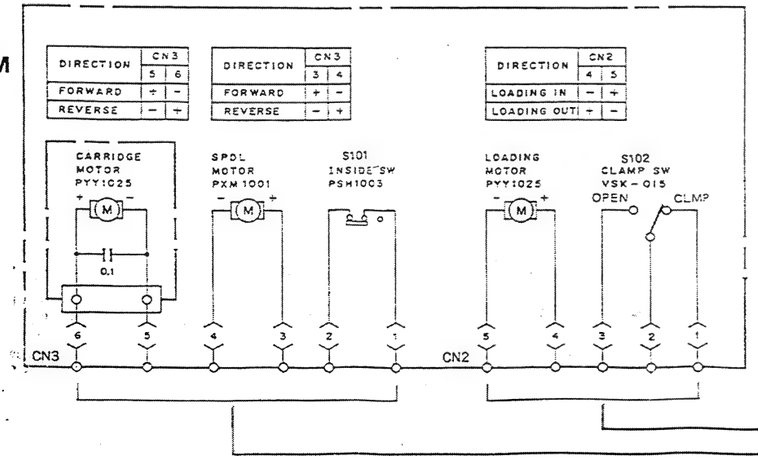
TRANSFORMER BOARD ASSEMBLY



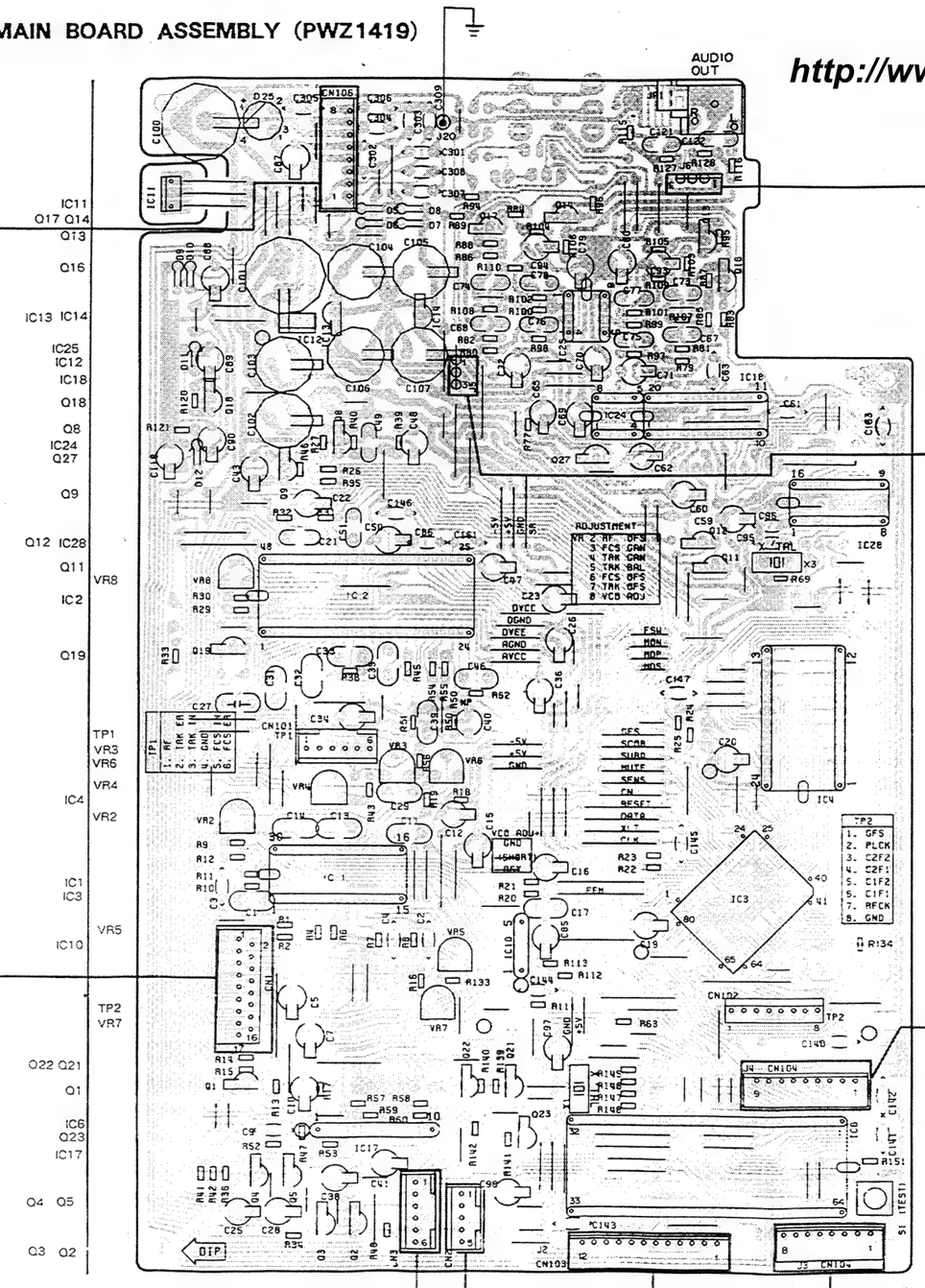
PICK-UP ASSEMBLY (PWY1003)

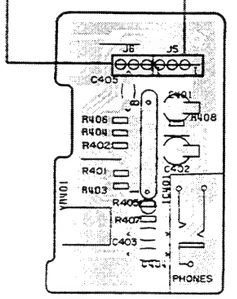


SERVO MECHANISM ASSEMBLY

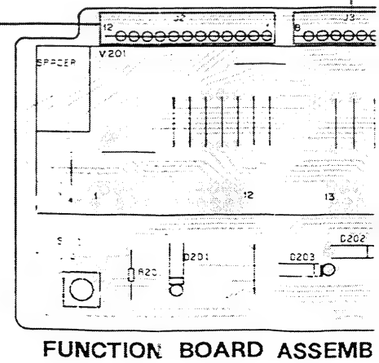


MAIN BOARD ASSEMBLY (PWZ1419)



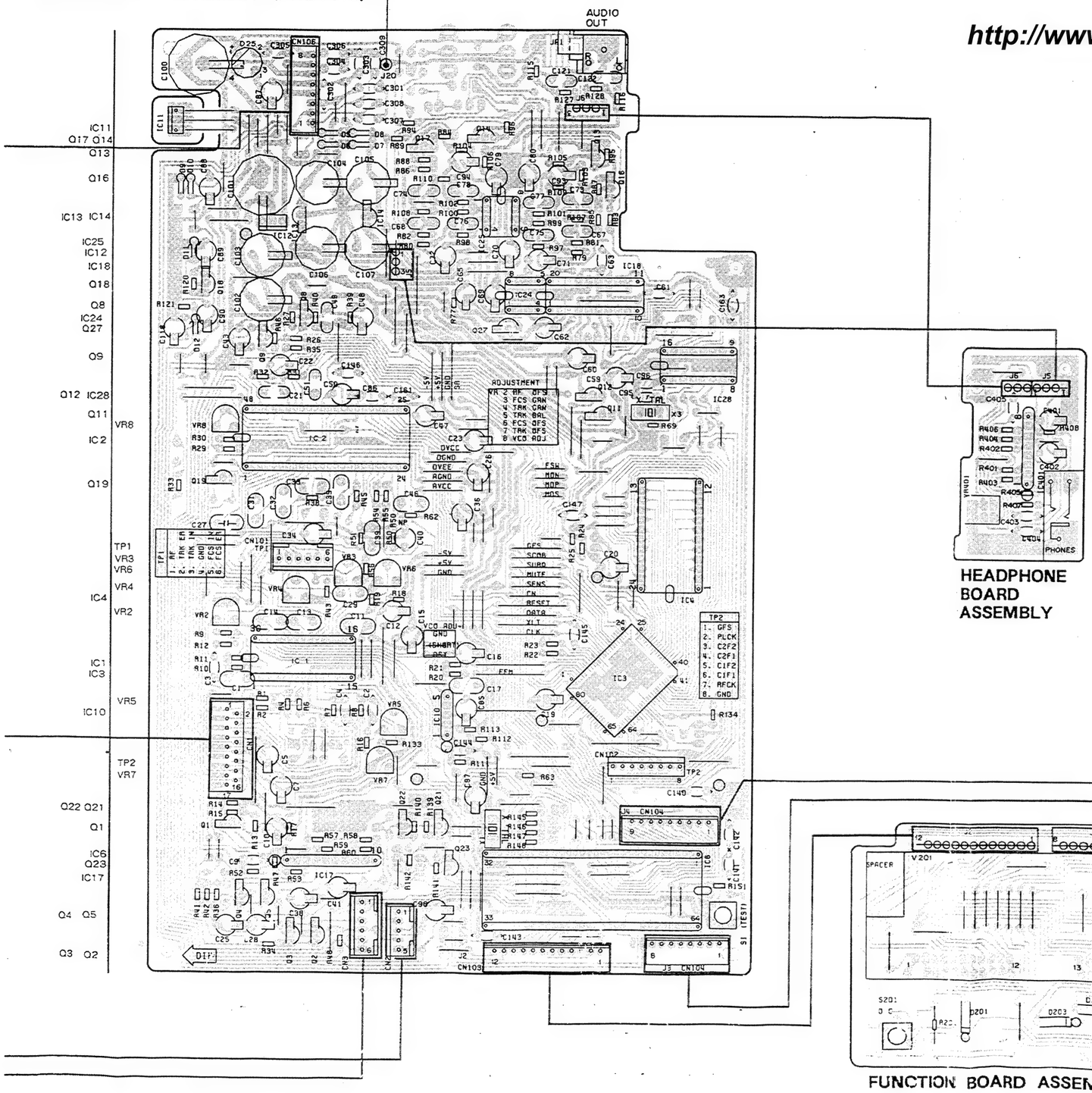


HEADPHONE BOARD ASSEMBLY

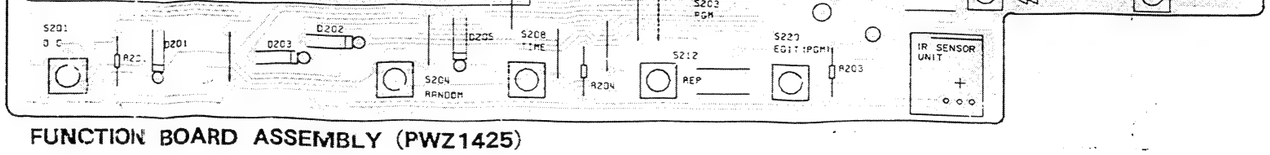


FUNCTION BOARD ASSEMB

MAIN BOARD ASSEMBLY (PWZ1419)



HEADPHONE BOARD ASSEMBLY



FUNCTION BOARD ASSEMBLY (PWZ1425)

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
					Mylar capacitor
		FET			Styrol capacitor
		Diode			Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
		Coil			Resistor
		Transformer			Resonator
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ═ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ═ shows emitter.

8. ELECTRICAL PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4SR 5 6 2 1 F

Miscellaneous Parts

Mark	Symbol & Description	Part No.
⚠	Transformer board assembly	
◉	Main board assembly	PWZ1419
	Headphone board assembly	
◉	Function board assembly	PWZ1425
⚠	AC power cord	PDG1015
⚠ ★	Power transformer (120V)	PTT1054
⚠	Strain relief	CM-22C
	Pick up assembly	PWY1003
★★	Spindle motor	PXM1001
★★	Motor assembly (CARRIAGE, LOADING)	PYY1025
★★	S101 Slide switch (INSIDE)	PSH1003
★★	S102 Leaf switch (CLAMP)	VSK-015

⚠ Transformer board Assembly

SWITCH

Mark	Symbol & Description	Part No.
⚠★★	S301 Push switch (POWER)	PSA-009

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C301 (0.01 μF)	RCG-009

◉ Main board Assembly (PWZ1419)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	CXA1081S
★★	IC2	CXA1082AS
★★	IC3	CXD1135QZ
★★	IC4	CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
★★	IC18	LC7881-B
★★	IC10	M51957AL
★★	IC24,IC25	M5218P
★★	IC13	NJM78L12A
⚠★★	IC11	NJM78M05FA
★★	IC14	NJM79L12A
⚠★★	IC12	NJM79M05FA
★★	IC28	PD0034
★★	IC6	PD4151B
⚠★★	IC17	TA8410K
★★	Q11	DTA124ES
★★	Q12,Q19,Q23	DTC124ES
★★	Q18	2SA1048
★★	Q1,Q3,Q5	2SA1399
★★	Q21	2SA854S
★★	Q8,Q9,Q16,Q17,Q27	2SC1740S
★★	Q22	2SC1741S
★★	Q2,Q4	2SC3581
★★	Q13,Q14	2SD1302
★	D11	MTZ27B (MTZ27C)
★	D12	MTZ5.1B (MTZ5.1C)
⚠ ★	D25	WL02-5004-L
⚠ ★	D5 – D10	1SR139-100

SWITCH

Mark	Symbol & Description	Part No.
★★	S1 Tact switch (TEST)	PSG-065

CAPACITORS

Mark	Symbol & Description	Part No.
	C95,C96	CCCCH270J50
	C2 – C4	CCCCH300J50
	C145,C146	CCCSL101J50
	C161	CCCSL221J50
	C40	CEANP4R7M25
	C85	CEASR33M50
	C16,C22	CEAS4R7M50
	C34	CEAS4R7M50
	C10,C43,C62,C65	CEAS101M10
	C87,C88	CEAS101M50
	C104,C105	CEAS102M25
	C71,C72,C89,C90,C93,C94,C118	CEAS220M50
	C100,C101	CEAS222M16
	C48	CEAS3R3M50
	C102,C103	CEAS471M10
	C106,C107	CEAS471M16
	C5,C7,C12,C15,C19,C20,C23, C25,C26,C28,C36,C38,C41,C47, C50,C59,C60,C69,C70,C79,C80, C97,C98	CEAS330M16
	C163	CKCYF473Z50
	C86,C140 – C144,C301 – C309	CKCYF103Z50
	C33,C51	CQMA102K50
	C14,C17,C46,C61,C63, C147	CQMA103K50
	C31,C32,C35,C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C9,C11,C21	CQMA333K50
	C75,C76	CQMA561J50
	C1,C27,C49,C73,C74	CQMA472J50
	C67,C68	CQMA683J50
	C77,C78	CQMA681J50
	C121,C122	CQSA102J50

RESISTORS

Mark	Symbol & Description	Part No.
★	VR2 Semi-fixed (10k)	VRTB6VS103
★	VR3 – VR7 Semi-fixed (22k)	VRTB6VS223
★	VR8 Semi-fixed (1k)	VRTS6VS102
	R30 Metal thin film	RN1/6PQ3601F
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA1 2P terminal (OUTPUT)	PKB1009
★	X3 Crystal resonator	PSS-012
★	X1 Ceramic resonator	VSS1014

Headphone board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401	M5218L

CAPACITORS

Mark	Symbol & Description	Part No.
	C401,C402	CEAS330M16
	C403 ,C404	CKCYF103Z50
	C405	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
★	VR401 Variable resistor (PHONES LEVEL)	PCS1001
	R401 – R408	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA2 Phone jack (PHONES)	RKN1001

◉Function board Assembly (PWZ1425)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D201 – D206	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
★★	S201 – S223 Tact switch (STOP,PAUSE,PLAY,TIME, REPEAT,OPEN/CLOSE, MANUAL SEARCH,TRACK SEARCH,TRACK NO.(0 – 9) RANDOM PLAY, EDIT , PROGRAM MEMORY)	PSG-065

RESISTORS

Mark	Symbol & Description	Part No.
	R201 – R204	RD1/4PM103J

OTHERS

Mark	Symbol & Description	Part No.
★	V201 Fluorescent indicator tube	PFL1019
	IR sensor unit	GP1U50V

9. ADJUSTMENTS

The adjustments for this unit are given below. Adjustments must be made in the order in which they are listed.

• ADJUSTMENTS AND CHECK ITEMS

1. Tracking offset, focus offset and RF offset adjustment
2. RF level adjustment
3. LD (laser diode) power check
4. Focus lock and spindle lock check
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free run frequency adjustment
11. Method for confirming S character

• REQUIRED EQUIPMENT

1. Dual trace oscilloscope
2. Optical power meter
3. Test disc (YEDS-7)
4. Loop gain adjustment filter
5. Signal generator
6. Frequency counter
7. Other regular measuring equipment

Adjustment Point

• ABOUT THE TEST MODE

All adjustments must be carried out with the unit in the test mode.

How to activate and release the test mode

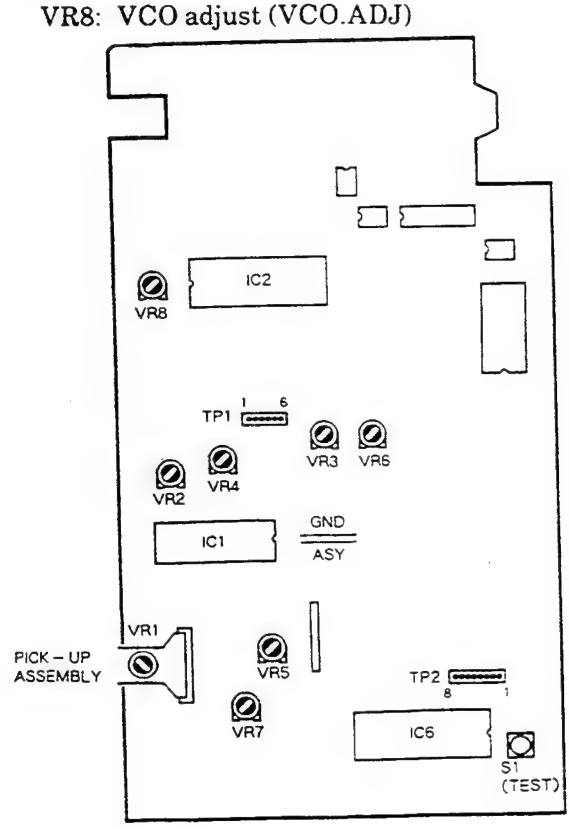
① To activate the test mode, turn ON the power switch (S301) with the test mode switch (S1) in the ON position.

② The test mode is released by turning the power switch OFF.

The functions of the keys in the test mode are outlined in Table 9-1.

• ADJUSTMENT VRs AND THEIR NAMES

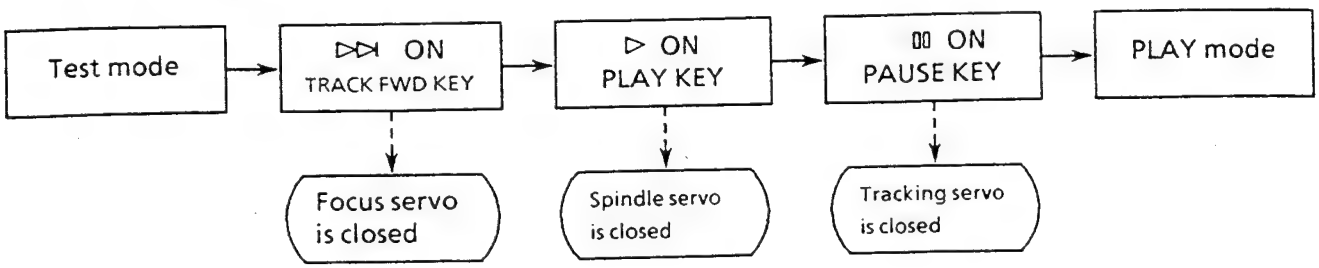
VR1: Laser power
VR2: RF offset (RF.OFS)
VR3: Focus gain (FOCS.GAN)
VR4: Tracking gain (TRKG.GAN)
VR5: Tracking balance (TRKG.BAL)
VR6: Focus offset (FOCS.OFS)
VR7: Tracking offset (TRKG.OFS)
VR8: VCO adjust (VCO.ADJ)



In the test mode, the servos must be closed and opened individually. Consequently, the servos must each be closed in the proper sequence (serial sequence) in order to put the machine into the play mode. Note also that the machine will not enter the play mode when the PAUSE (▯▯) key is pressed.

For example, in order to change from the stop to the play mode, the function keys must be pressed in the following order.

* In the test mode, the servos must be operated in serial sequence.



• KEY FUNCTIONS IN THE TEST MODE

Symbol	Key name	Function in test mode	Description
▷▷|	TRACK FWD	Focus servo close	Turns ON the laser diode, and raises and lowers the focusing actuator to close the focus servo.
▷	PLAY	Spindle servo close	Closes the servo in the CLV-A mode after kicking the spindle motor.
▯▯	PAUSE	Tracking servo close/open	Acts as a toggle: closes the tracking servo and activates play mode when pressed (provided the focus and spindle servos are closed), at which time the PAUSE indicator illuminates; opens the tracking servo when pressed again.
▷▷	MANUAL SEARCH REV	Carriage reverse (moves inward)	Moves carriage quickly (3cm/s) toward innermost track. Be careful not to move too far as there is no safety device to stop the carriage.
◁◁	MANUAL SEARCH FWD	Carriage forward (moves outward)	Moves carriage quickly (3cm/s) toward outermost track. Be careful not to move too far as there is no safety device to stop the carriage.
□	STOP	Stop	Stops all servos and returns system to its initial state.
⏏	OPEN / CLOSE	Disc tray open/close	Opens and closes the disc tray. However, pickup does not return to rest on OPEN, and it remains stationary on CLOSE.

Table 9-1.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
1	Tracking offset, focus offset and RF offset adjustment					
			TP1 Pin 2 (TRKG. ERR)	VR5 (TRKG. BAL) VR7 (TRKG. OFS)	Tracking offset 45° 0V ± 50mV	• Put unit in the test mode (see page 31). • Set VR5 TRKG. BAL (tracking balance) to the position about 45° to the left of center. • Adjust VR7 TRKG.OFS (tracking offset) so that the TRKG.ERR (tracking error) voltage at TP1 pin 2 becomes 0 V ± 50 mV.
			TP1 Pin 6 (FOCS. ERR)	VR6 (FOCS. OFS)	Focus offset 0V ± 50mV	• Adjust VR6 FOCS.OFS (focus offset) so that the FOCS.ERR (focus error) voltage at TP1 pin 6 becomes 0 V ± 50 mV.
			TP1 Pin 1 (RF. OUT PUT)	VR2 (RF. OFS)	RF offset 100mV ± 50mV	• Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 pin 1 becomes 100mV ± 50 mV. *Note: When adjusting the tracking offset, always perform "6. Tracking Balance Adjustment."*
2	RF level adjustment					
			TP1 Pin1 (RF OUT PUT)	VR1 (Laser power)	1.8V ± 0.1V	• Put unit in the test mode (see page 31). • Connect the oscilloscope to TP1 pin 1 (RF output), play the test disc, and measure the P-P voltage of the RF waveform. • Adjust VR1 (Laser power) so that the voltage is 1.8V ± 0.1V
3	LD (laser diode) power check					
					Less than 0.13mW	• Put unit in the test mode (see page 31). • Press the TRACK FWD (▷▷I) key to turn ON the laser diode. • Place the sensor of the optical power meter directly above the objective lens and confirm that LD power does not exceed 0.13mW.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
4	Focus lock and spindle lock check					
	V 0.5V / div	H 100 msec / div	TP1 pin1 (RF output)		RF signal is output Forward (clockwise) rotation	• Set the test disc. • Put unit in the test mode (see page 31). • Press the MANUAL SEARCH FWD (▷▷) key to move the pickup to the center of the disc. • Observe the output of TP1 pin 1 (RF output) on the oscilloscope. Confirm that the RF signal is output after the TRACK FWD (▷▷|) key is pressed. • Press the PLAY (▷) key and confirm that the disc rotates at constant speed (approx. 30 rpm near center of disc) in the forward (clockwise) direction; disc may not run away or rotate counterclockwise.
5	Grating adjustment (1)					

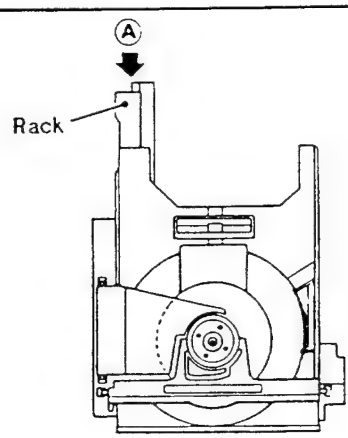


Fig. 9-1

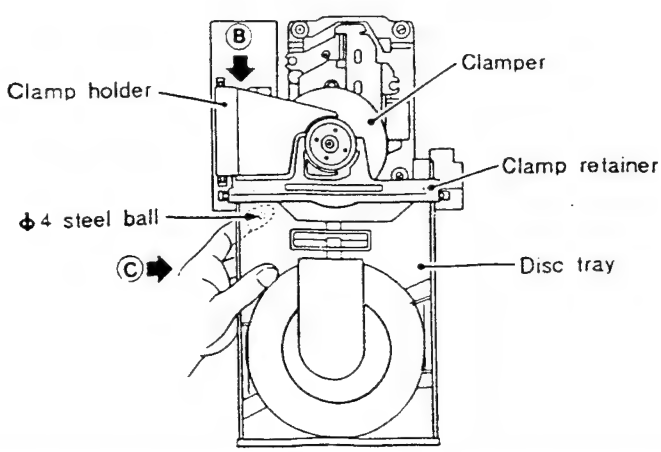


Fig. 9-2

Remove the disc tray before beginning this adjustment.

- Removal of the disc tray

1. Press the rear edge of the rack, (*1) marked Ⓐ in Fig. 9-1, while pulling the disc tray out to the position where it catches, illustrated in Fig. 9-2.

(*1) When the rear edge of rack (A) is pressed, first the disk clamp is released. If you continue pressing after it has been released completely, the disk tray is ejected.

2. While pulling the clamp holder Ⓑ (see Fig. 9-2) upward with the right hand, hold the tray as indicated by Ⓒ in the left hand and pull it outward. Take care not to allow the ϕ4 steel ball to fall (we recommend holding the ball in place with the left index finger while extracting the tray.)

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure

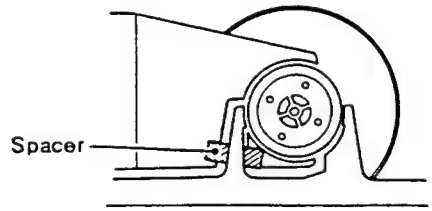


Fig. 9-3

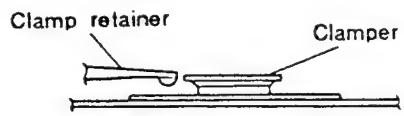


Fig. 9-4

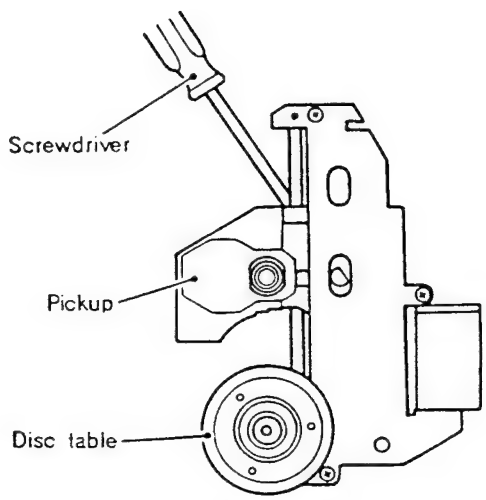


Fig. 9-5

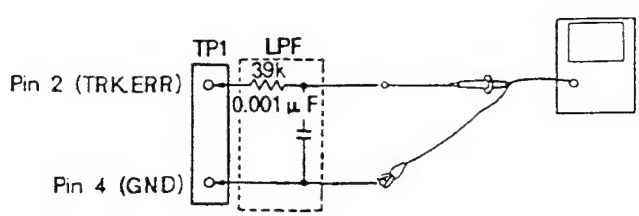


Fig. 9-6

- Put unit in the test mode (see page 31).
- Press the MANUAL SEARCH FWD (▷▷) key to move the pickup to the vicinity of what would be the center of the disc. Position the pickup so its grating adjusting screw is visible through the elongated hole on the spindle motor side of the servo mechanism base plate.
- As shown in Fig. 9-5, insert a (slotted) ⊖ screwdriver from the rear of the mechanism and check that the grating adjusting screw can be rotated.
- Mount the test disc; be sure to insert a 3-5 mm spacer (if no spacer is available, use a hex wrench) between the clamp holder and clamp retainer, as shown in Fig. 9-3.
- Confirm that the clamper and the clamp retainer are not contacting one another (Fig. 9-4).
- Press the TRACK FWD (▷▷|) and the PLAY (▷) keys sequentially to close the focus and spindle servos (do not close the tracking servo).
- Insert a 4 kHz-cutoff low pass filter between the oscilloscope and TP1 pins 2 (TRKG.ERR) and 4 (GND) as shown in Fig. 9-6 and observe the waveform of TP1 pin 2 (tracking error) on the oscilloscope.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items / Adjustment specifications	Adjustment procedure
	0.5V / div	5ms / div	TP1 Pin 2 TRKG. ERR	Grating adjusting screw Grating adjusting screw	Null point Max. amplitude	• Turn the grating adjusting screw with the ⊖ screwdriver to find the null point (see Photo 9-1). • Next, slowly turn the ⊖ screwdriver COUNTERCLOCKWISE and adjust to the point where the waveform (tracking error signal) first achieves its maximum amplitude (see Photo 9-3). *Note: Avoid applying pressure to the ⊖ screwdriver while adjusting the screw. Doing so causes the pickup to move inward, making adjustment more difficult.* • Lastly, remove the low pass filter and confirm that the tracking error signal p-p voltage does not greatly vary when the pickup is moved to the inner-most and outer-most tracks of the disc. If the levels diverge by ± 10% or more, re-adjust the maximum error amplitude point by turn the grating adjusting screw.

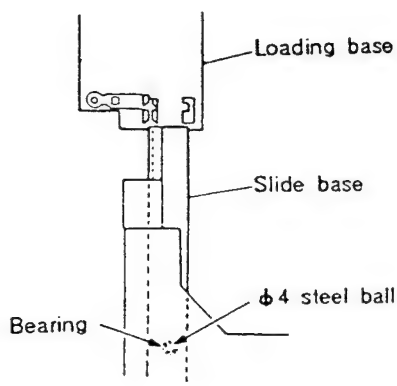


Fig. 9-7

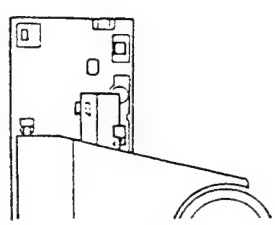


Fig. 9-8

Re-mount the disc tray according to the following procedure when the grating adjustment is complete.

1. Remove the disc and the spacer.
2. While lifting the clamp holder [marked Ⓑ in Fig. 9-2] with the right hand, hold the tray in the left hand as indicated by Ⓒ and slide the slide base into the hard resin fittings on the loading base as shown in Fig. 9-7 to re-insert the disc tray. At this time, be sure to hold the steel ball in place with the index finger of the left hand. Also, be careful that the front panel is not damaged by the slide base and bearing of the steel ball's bearing (in the slide base) coming into contact with the panel.
3. Insert the slide base so that it fits into the two hard resin fittings at the rear of the loading base (see Fig. 9-8).
4. Insert the tray tightly.

DAC BOARD ASSEMBLY

● The DAC BOARD ASSEMBLY is used the PD－5100／HEM and HB types only.

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC701,IC702	PCM56P

CAPACITORS

Mark	Symbol & Description	Part No.
	C701 － C708	CEAS330M16

RESISTORS

Mark	Symbol & Description	Part No.
★	VR701,VR702 Semi-fixed (100k Ω)	VRTB6HS104
	R701 － R706	RD1/4PM□□□J

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) : ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
   ┌──┐ ; DC voltage (V) at no input signal.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

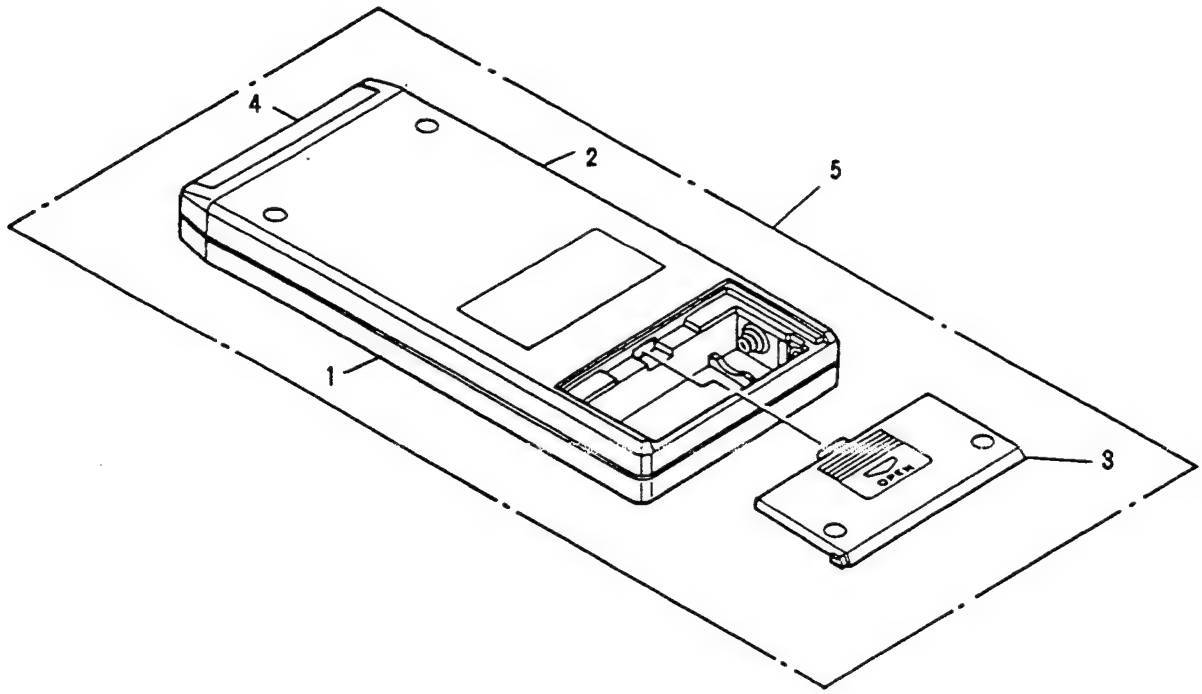
5. SWITCHES : (The underlined indicates the switch position)
   MAIN BOARD ASSEMBLY
   S1 : TEST MODE
   FUNCTION BOARD ASSEMBLY
   S201 : OPEN/CLOSE
   S202 : PLAY
   S203 : PROGRAM MEMORY
   S204 : RANDOM PLAY
   S205 : TRACK SEARCH (⏮)
   S206 : PAUSE
   S207 : MANUAL SEARCH (◀◀)
   S208 : TIME
   S209 : TRACK SEARCH (⏭)
   S210 : STOP
   S211 : MANUAL SEARCH (▶▶)
   S212 : REPEAT
   S213 : 1 ┐
   S214 : 4 │
   S215 : 7 │
   S216 : 0 │ (TRACK NO.)
   S217 : 2 │
   S218 : 5 │
   S219 : 8 ┘
   S220 : EDIT
   S221 : 3 ┐
   S222 : 6 │ (TRACK NO.)
   S223 : 9 ┘
   TRANSFORMER BOARD ASSEMBLY
   S301 : POWER ON － OFF
   MISCELLANEOUS
   S101 : INSIDE
   S102 : CLAMP OPEN － CLAMP

MAIN BOARD ASSEMBLY (PWZ1421)

The main board assembly (PWZ1421) is the same as the main board assembl (PWZ1419) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ1419	PWZ1421	
	C60	CEAS330M16	• • • • •	
	C61,C63	CQMA103K50	• • • • •	
	C62	CEAS101M10	• • • • •	
	C162	• • • • •	CCCCH100D50	
	C65	CEAS101M10	• • • • •	
	C75,C76	CQMA561J50	CQMA102K50	
	C77,C78	CQMA681J50	CQMA332J50	
	C71,C72	CEAS220M50	• • • • •	
	C79,C80	CEAS330M16	• • • • •	
★★	IC18	LC7881-B	• • • • •	
★★	IC30 – IC32	• • • • •	ICP-N10	
★★	IC24	M5218P	• • • • •	
★★	Q26	• • • • •	2SC3732	
★★	Q27	2SC1740S	• • • • •	
	R77	RD1/6PM222J	• • • • •	
	R156,R157	• • • • •	RD1/6PM103J	
	R158	• • • • •	RD1/6PM102J	
	R79,R80	RD1/6PM104J	• • • • •	
	R97,R98	RD1/6PM752J	RD1/6PM102J	
	R101,R102	RD1/6PM752J	RD1/6PM182J	
	R109,R110	RD1/6PM103J	RD1/6PM822J	

10. REMOTE CONTROL UNIT



NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Remote control unit

Mark	No.	Part No.	Description
	1	PNW1159	Case (T)
	2	PNW1160	Case (B)
	3	PNW1161	Cover
	4	PAM1077	Filter
	5	PWW1022	Remote control unit

11. FOR KC, HEM, AND HB TYPES

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
- 560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
- 47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
- 0.5 Ω → 0R5 ····· RN2H 0 R 5 K
- 1 Ω → 010 ····· RS1P 0 1 0 K

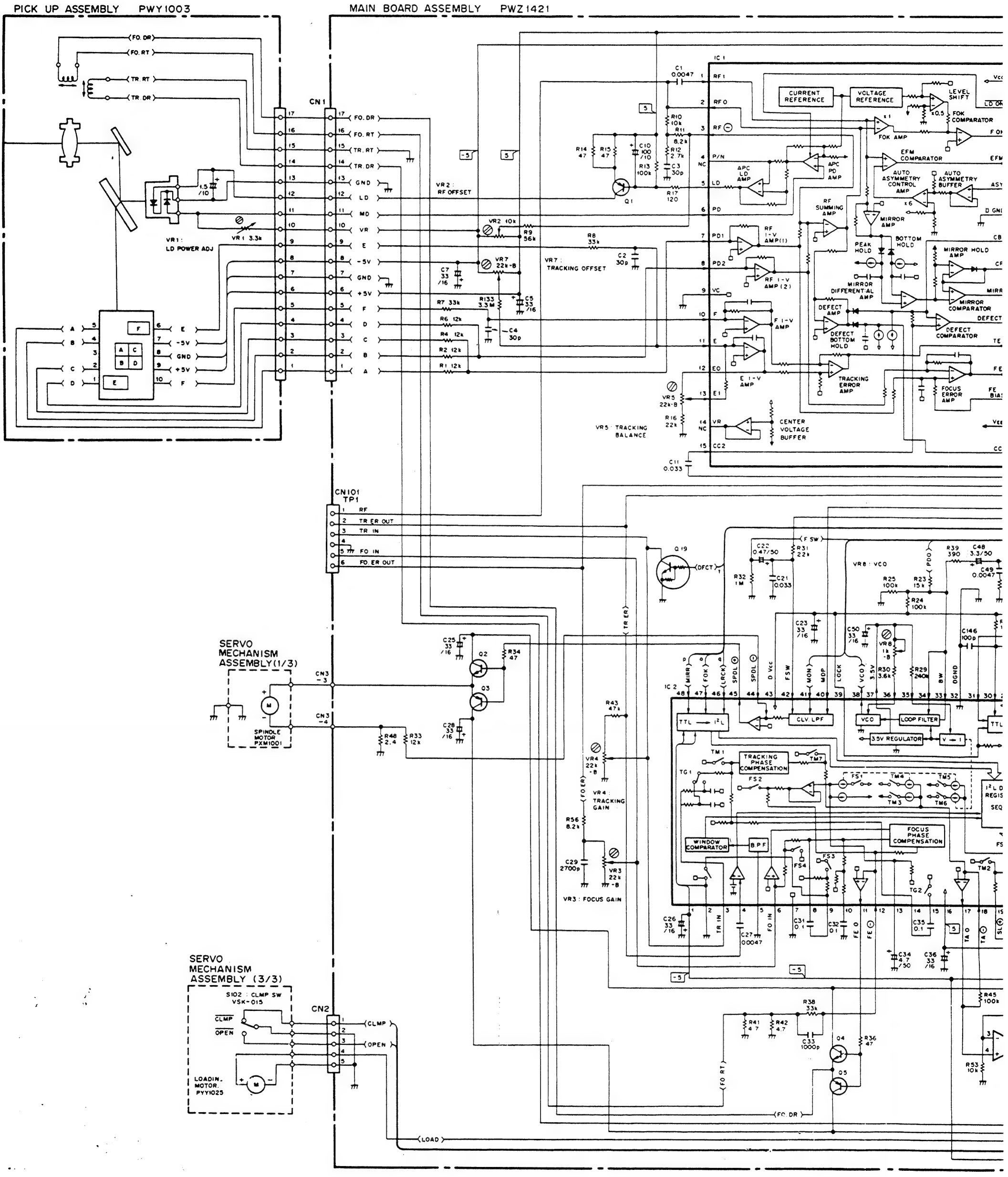
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- 5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

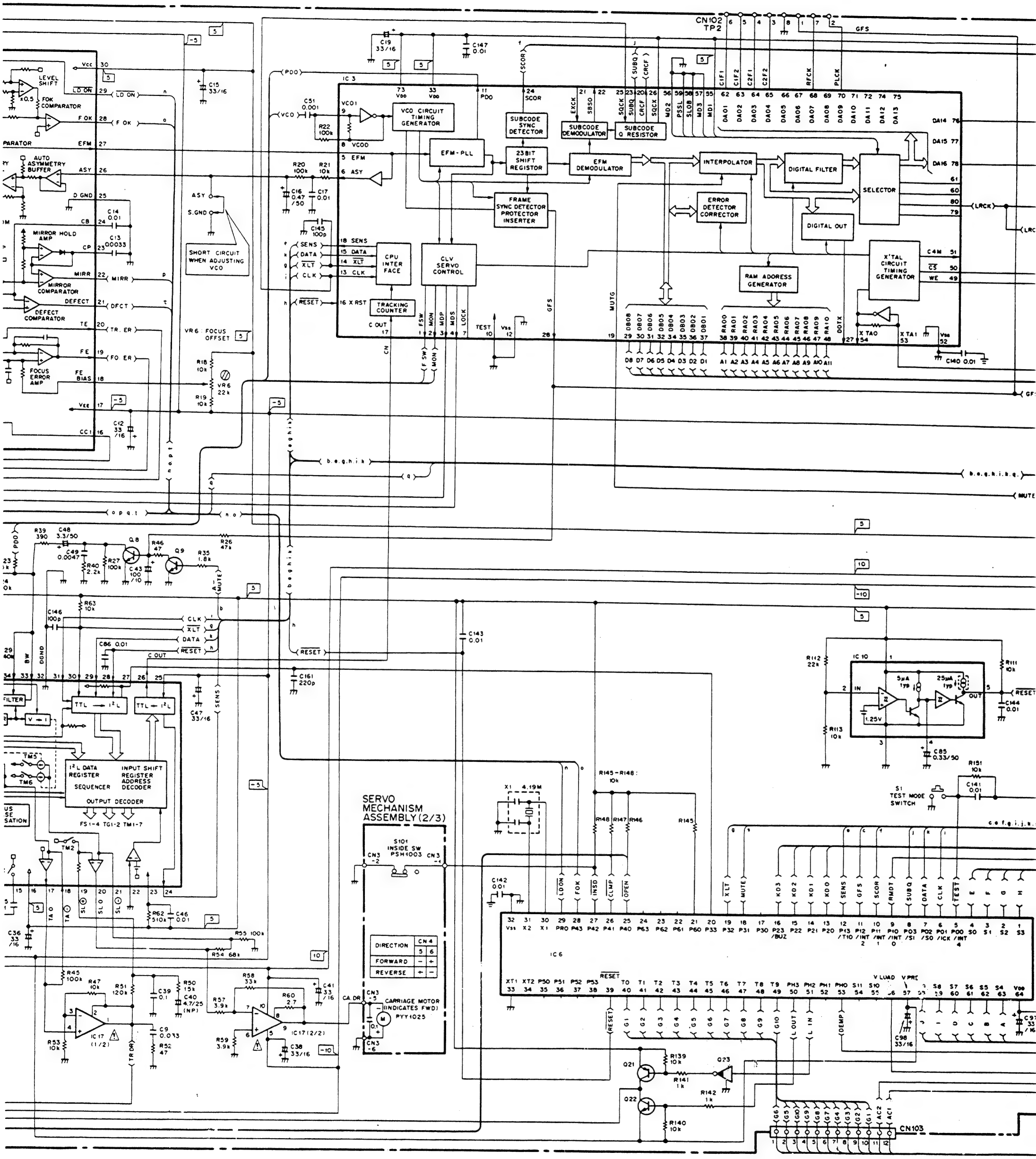
11.1 CONTRAST OF MISCELLANEOUS PARTS

The PD-5100/KC, HEM AND HB types are the same as the PD-5100/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No. PD-5100 /KU type	PD-5100 /KC type	PD-5100 /HEM type	PD-5100 /HB type	Remarks
◉	Main board assembly	PWZ1419	PWZ1419	PWZ1421	PWZ1421	
	DAC board assembly	• • • • •	• • • • •	Non supply	Non supply	
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1004	
⚠ ★	Power transformer (AC120V)	PTT1054	PTT1054	• • • • •	• • • • •	
⚠ ★	Power transformer (AC220V/240V)	• • • • •	• • • • •	PTT1055	PTT1055	
	Packing case	PHG1179	PHG1194	PHG1194	PHG1194	For packing
	Operating instructions (English)	PRB1045	• • • • •	• • • • •	PRB1045	
	Operating instructions (English/French)	• • • • •	PRE1055	PRE1055	• • • • •	
	Operating instructions (German / Italian / Spanish / Portuguese/Swedish/ Dutch)	• • • • •	• • • • •	PRF1011	• • • • •	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	
	FL filter A	PAM1230	PAM1230	• • • • •	• • • • •	
	FL filter C	• • • • •	• • • • •	PAM1231	PAM1231	

11.2 SCHEMATIC DIAGRAM

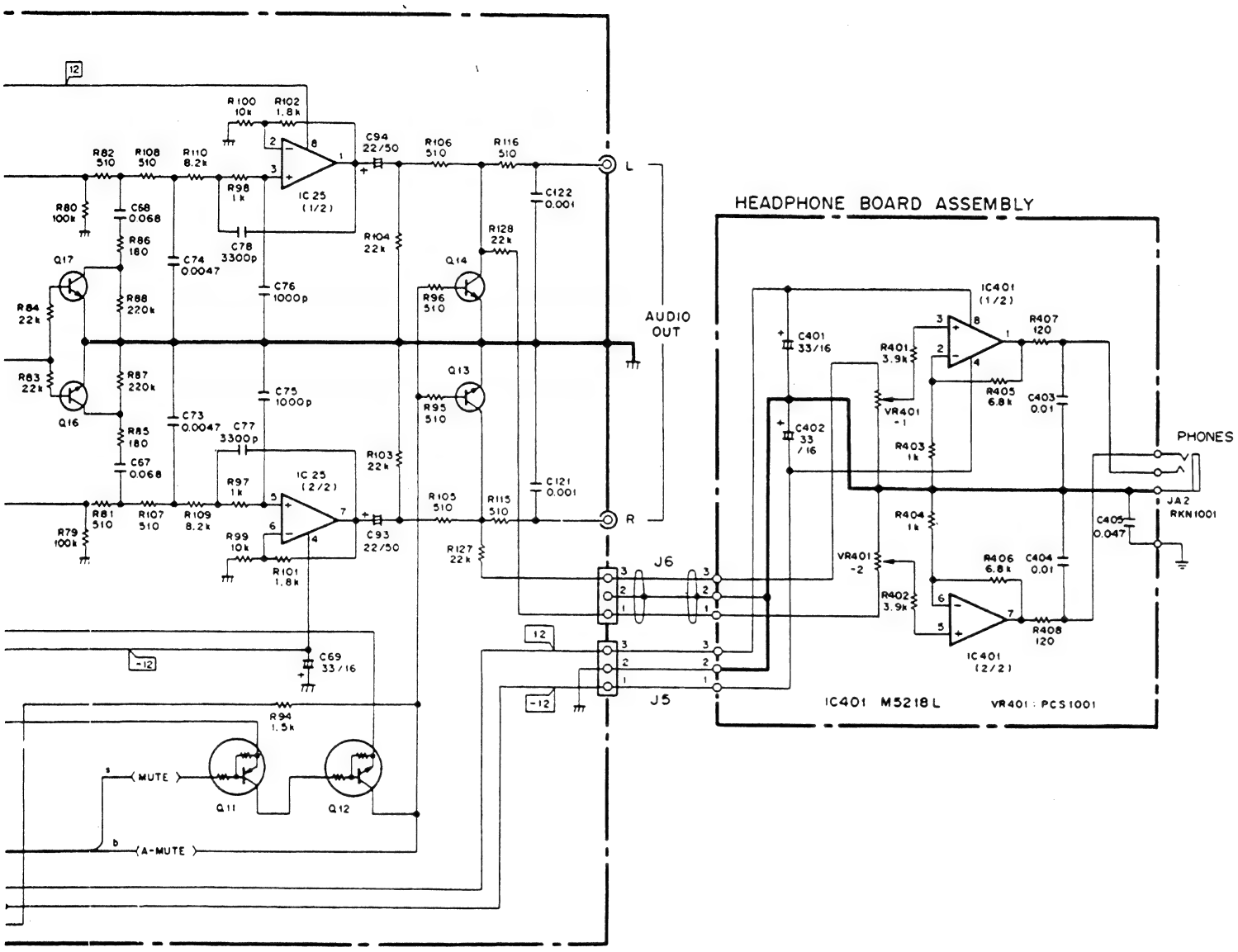


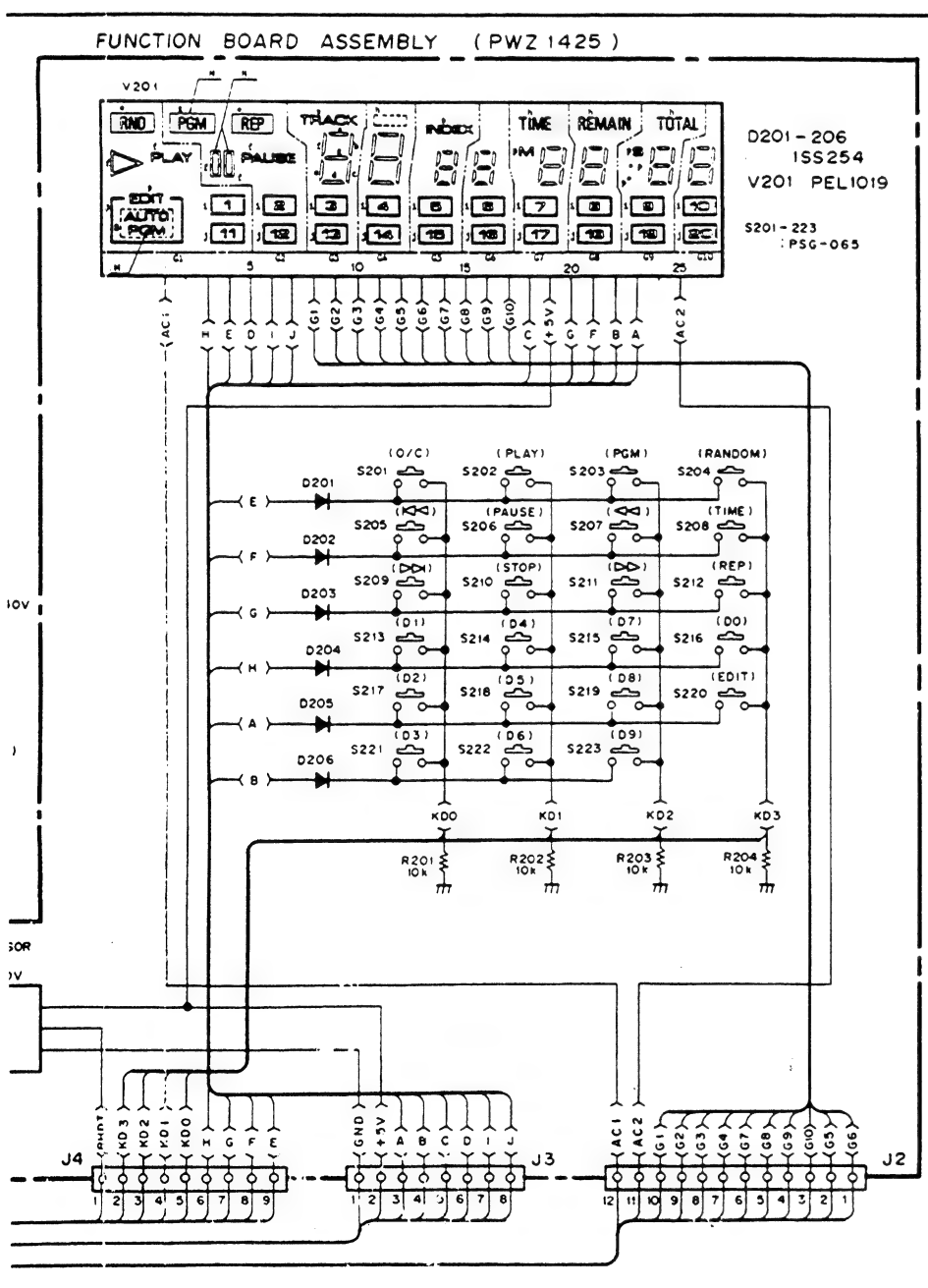


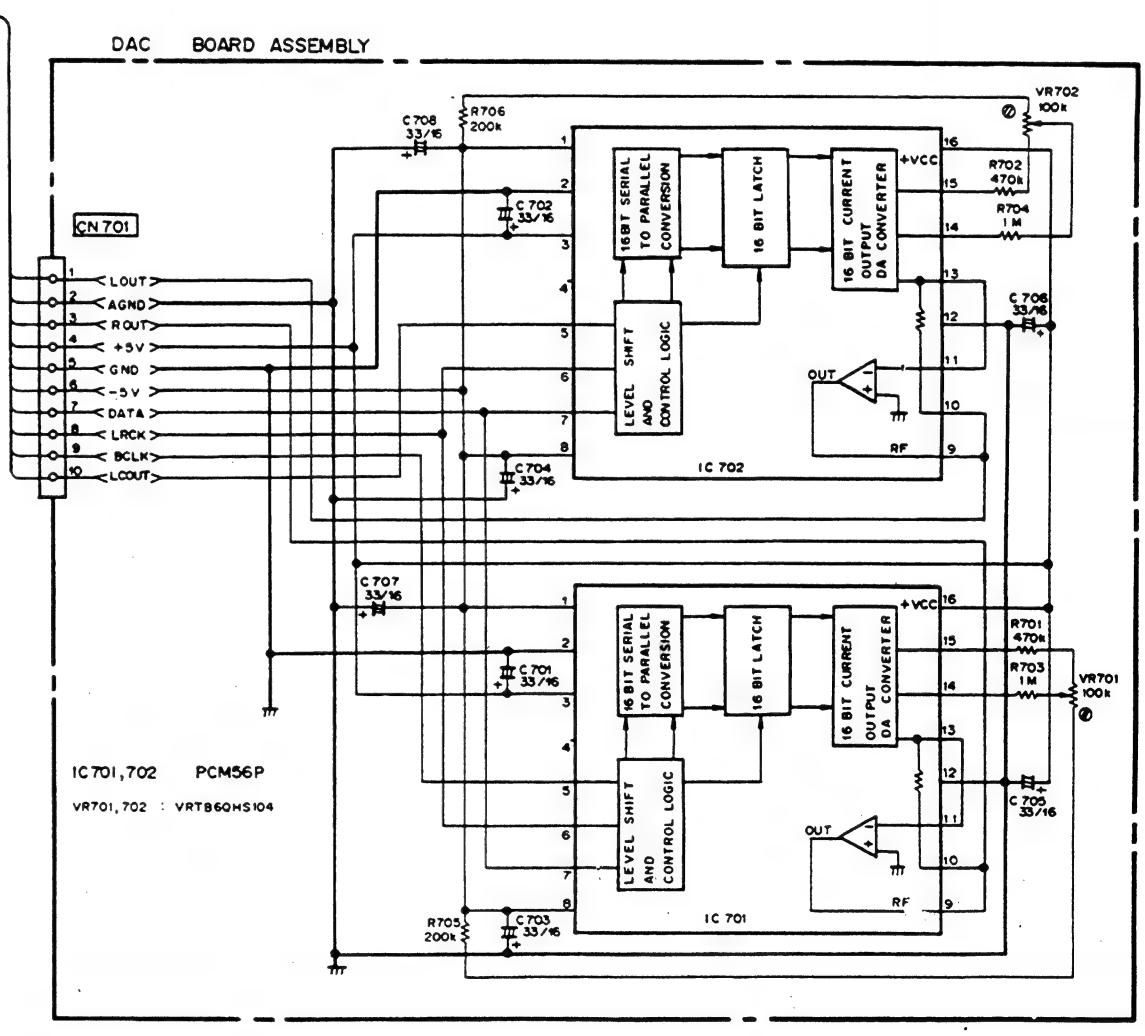
S1	: PSG – 065
VR2	: VRTB6VS103
VR3 – 7	: VRTB6VS223
VR8	: VRTS6VS102
X1	: VSS1014
X3	: PSS – 012

IC1	CXA1081S
IC2	CXA1082AS
IC3	CXD1135QZ
IC4	CXK5816PN – 12L (CXK5816PN – 15L) (LH5116 – 15)
IC6	PD4151B
IC10	M51957AL
IC11	NJM78M05FA
IC12	NJM79M05FA
IC13	NJM78L12A
IC14	NJM79L12A
IC17	TA8410K
IC25	M5218P
IC28	PD0034
IC30 – 32	ICP – N10

Q1,3,5	2SA1399
Q2,4	2SC3581
Q8,9,16,17	2SC1740S
Q11	DTA124ES
Q12,19,24	DTC124ES
Q13,14	2SD1302
Q18	2SA1048
Q21	2SA854S
Q22	2SC1741S
Q26	2SC3732
D5 – 10	1SR139 – 100
D11	MTZ27B (MTZ27C)
D12	MTZ5.1B (MTZ5.1C)
D25	WL02 – 5004 – L



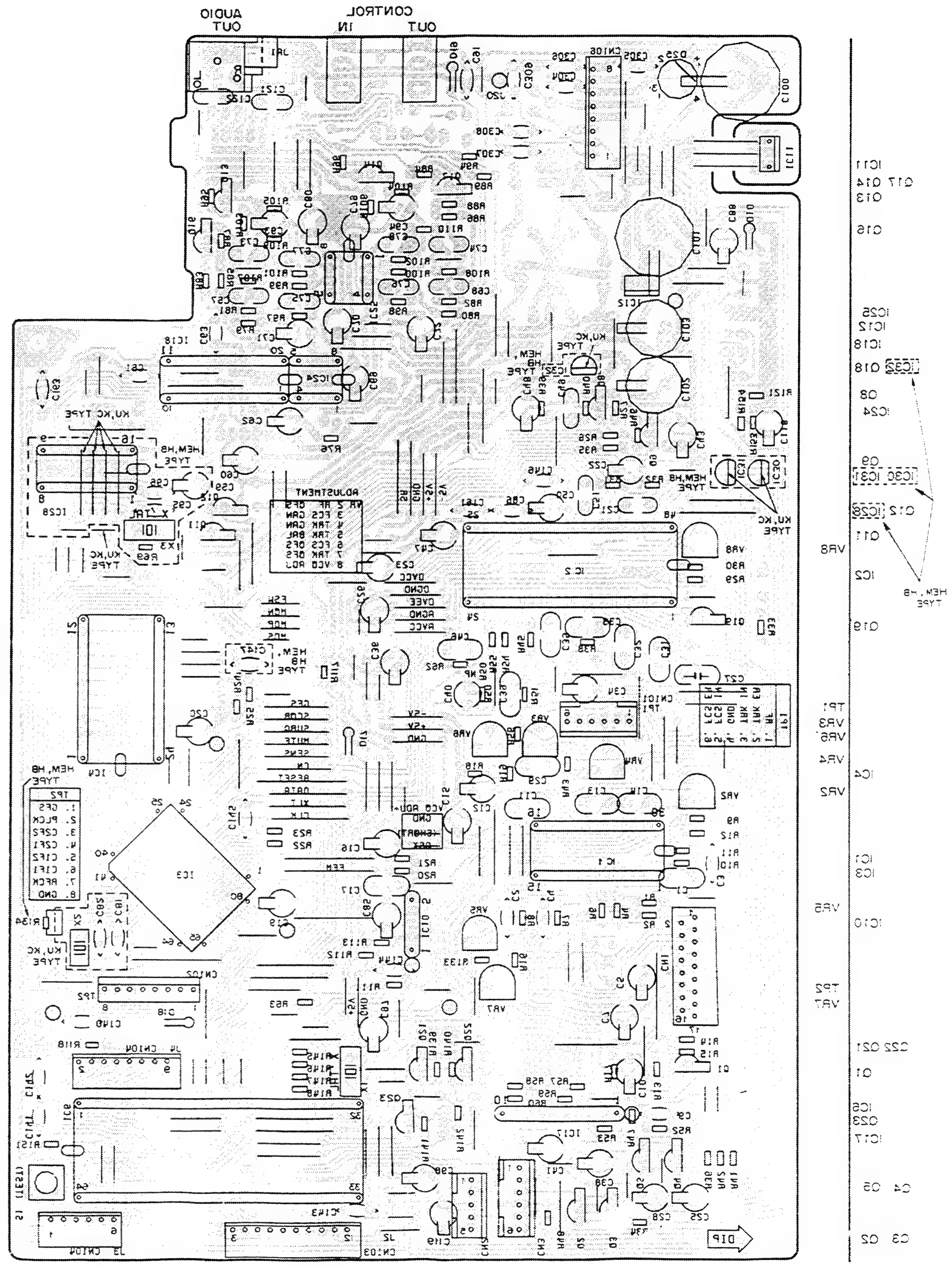




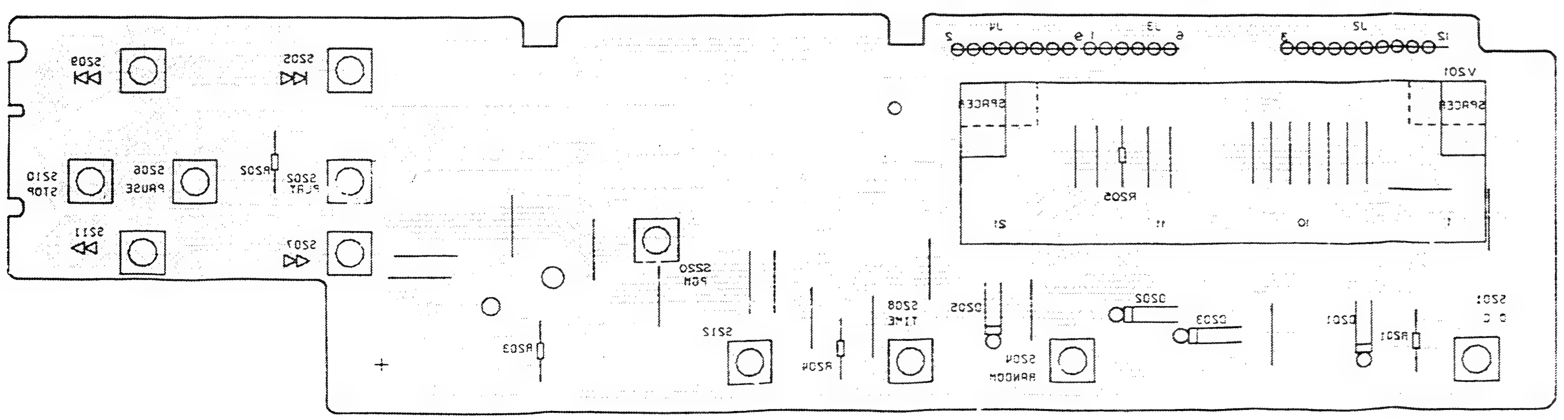
8 | 7 | 6 | 5 | 4

MAIN BOARD ASSEMBLY (PWZ1418) FOR KU, KC types
MAIN BOARD ASSEMBLY (PWZ1440) FOR HEM, HB types

This P.C.B. connection diagram is viewed from the foil side.

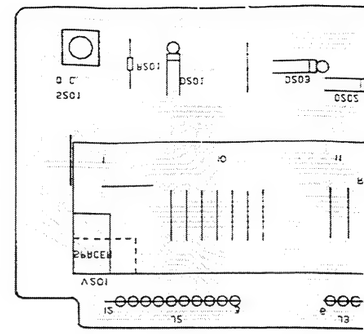


FUNCTION BOARD ASSEMBLY (PWZ1422)

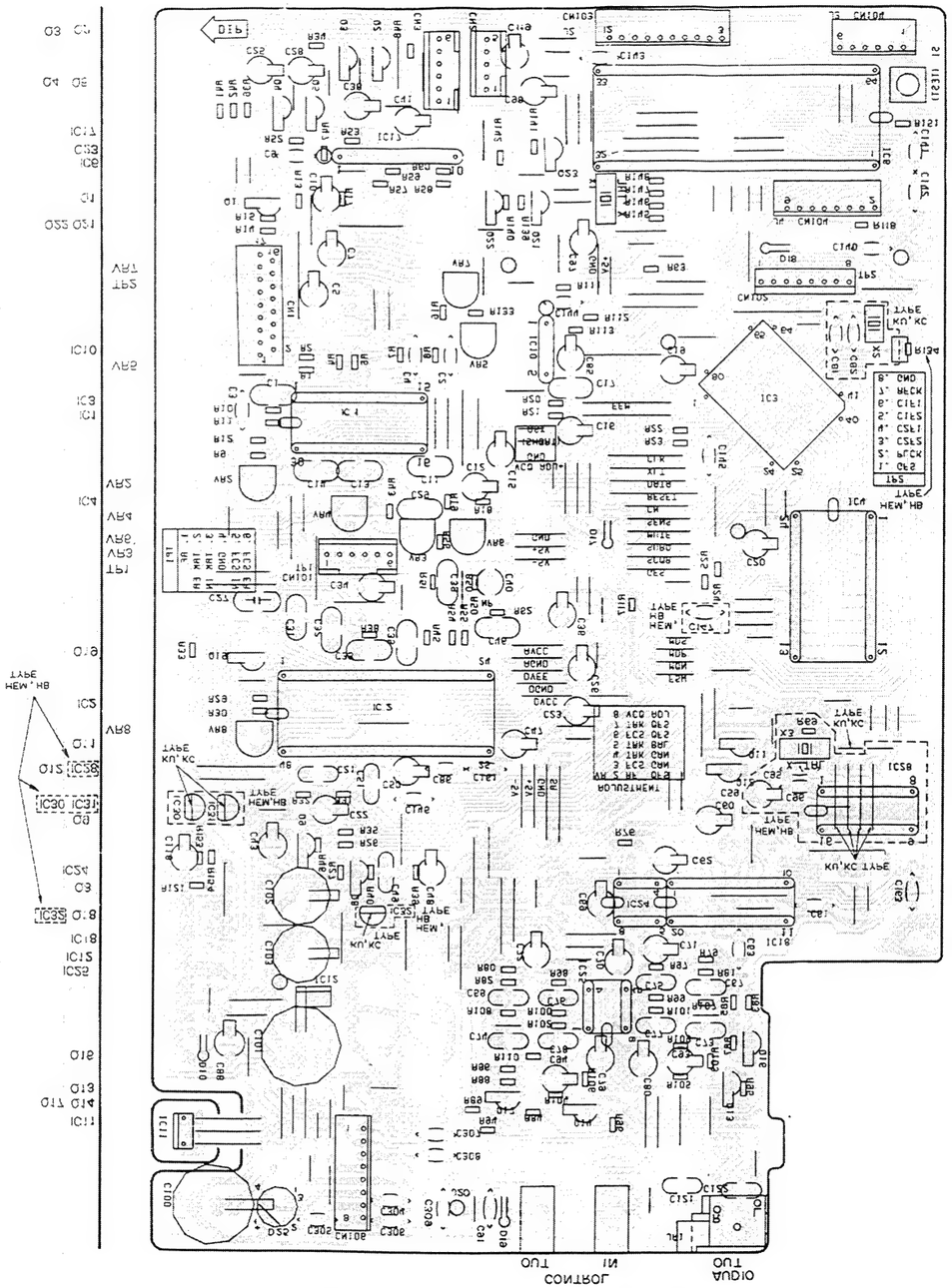


9 | 8 | 7 | 6 | 5 | 4

TRANSFORMER BOARD ASSEMBLY



FUNCTION BOARD ASSE



MAIN BOARD ASSEMBLY (PWZJA18) FOR KU, KC type
MAIN BOARD ASSEMBLY (PWZJA40) FOR HEM, HB types

11.3 P.C. BOARD PATTERN

P.C. Boards Pattern of PD－5100/HEM, HB types are the same connections as the PD－5100/KU type.

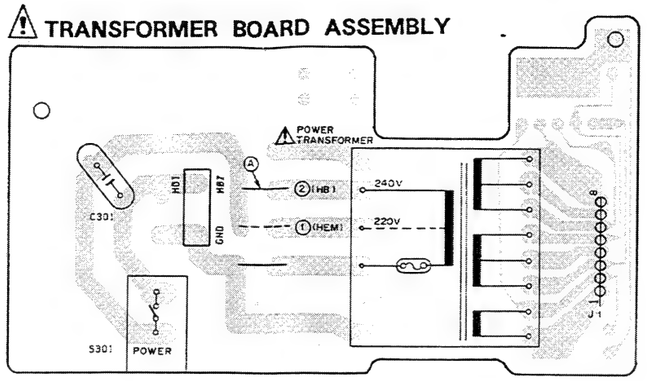
Refer to PD－5100/KU type.

LINE VOLTAGE SELECTION FOR HEM AND HB TYPES

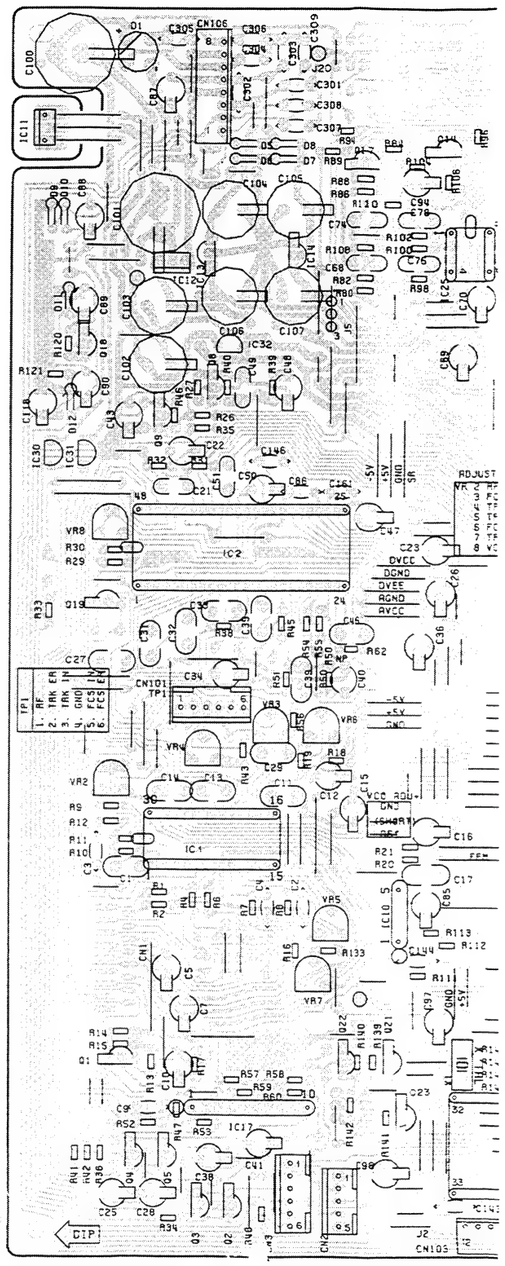
1. Disconnect the AC power cord.
2. Remove the bonnet.
3. Change the position of the jumper Ⓐ as follows (Refer to the transformer board assembly).

Voltage	Jumper Ⓐ position
220V	①
240V	②

⚠ TRANSFORMER BOARD ASSEMBLY



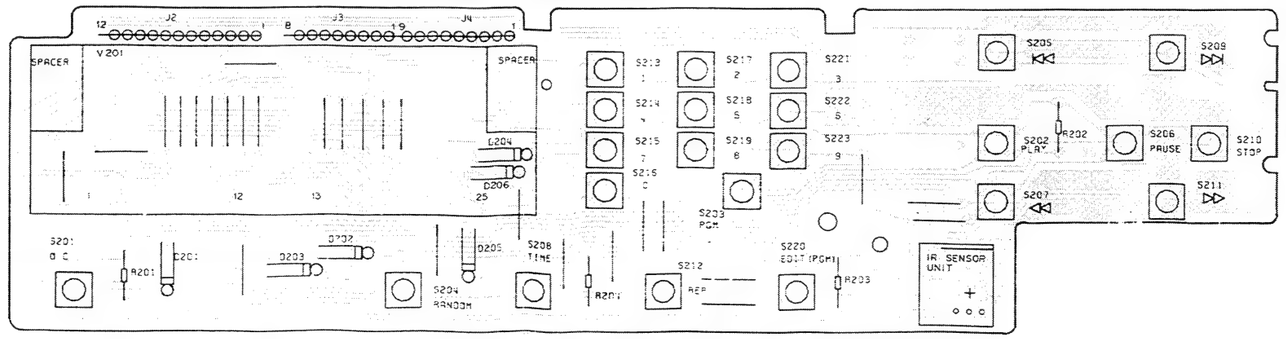
MAIN BOARD ASSEMBLY (PWZ1421)



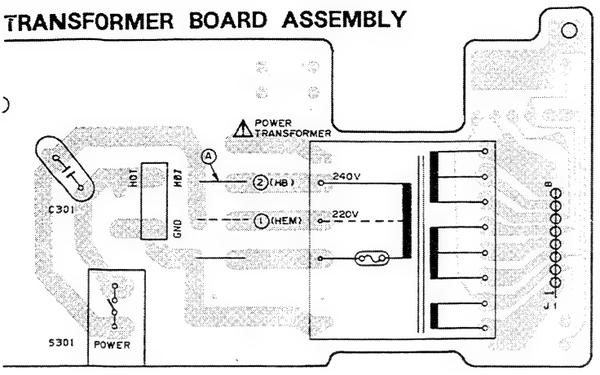
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
					Mylar capacitor
D S G		FET	SR		Styrol capacitor
			SF		
		Diode	NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
					Resistor
		Coil			
		Transformer			Resonator
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

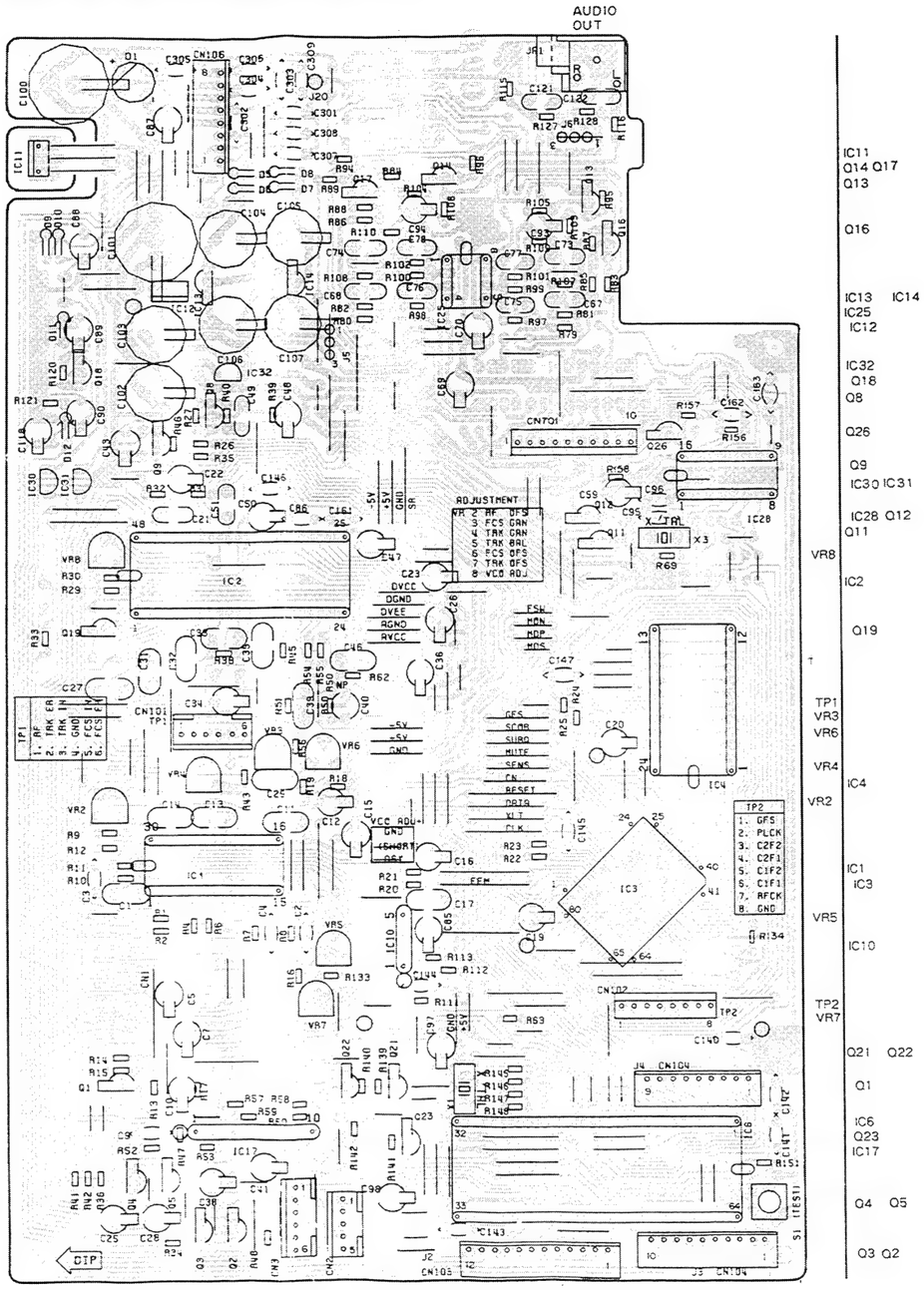
FUNCTION BOARD ASSEMBLY (PWZ1425)



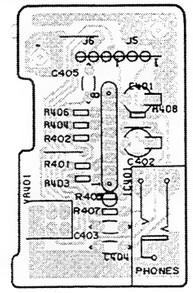
TRANSFORMER BOARD ASSEMBLY



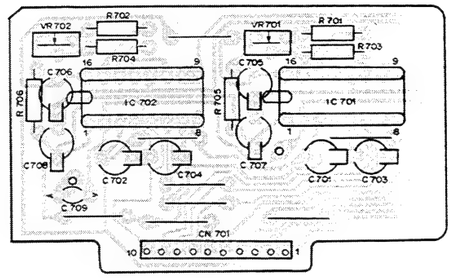
MAIN BOARD ASSEMBLY (PWZ1421)



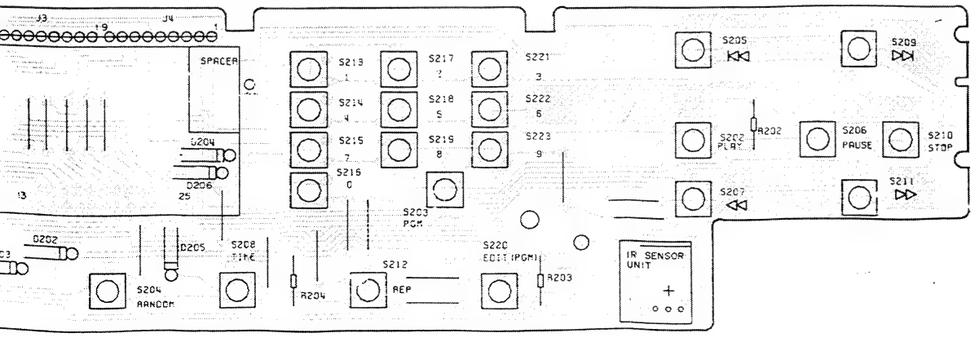
HEADPHONE BOARD ASSEMBLY

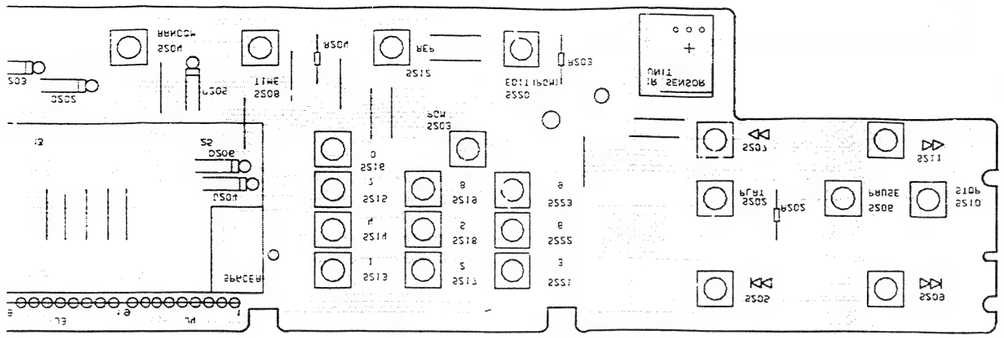


DAC BOARD ASSEMBLY

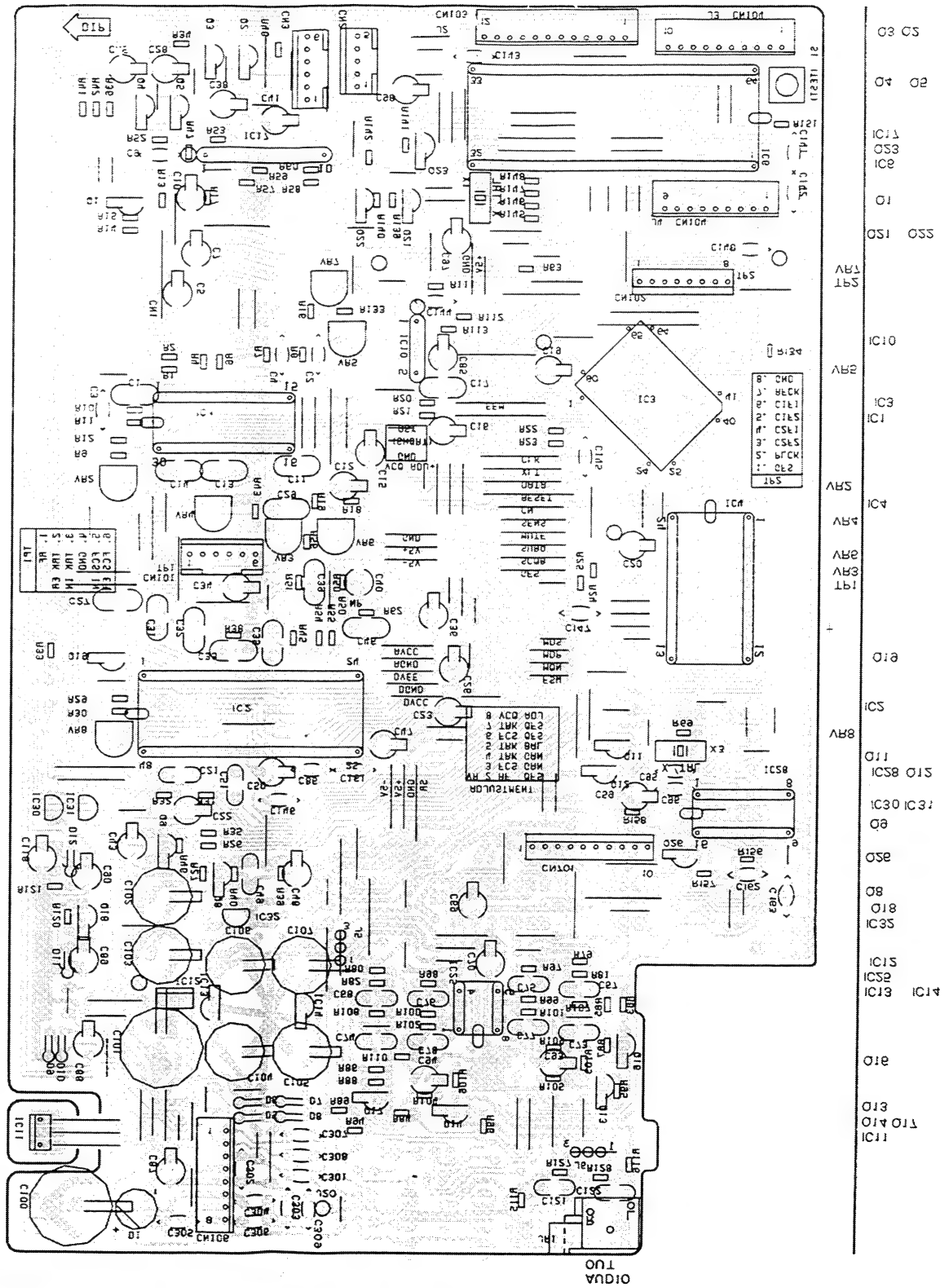


BOARD ASSEMBLY (PWZ1425)

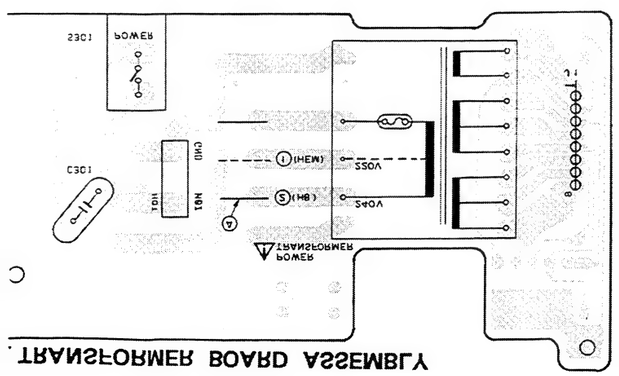




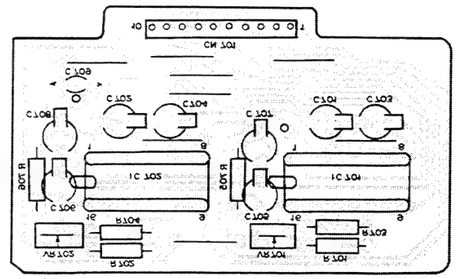
BOARD ASSEMBLY (PWZ1452)



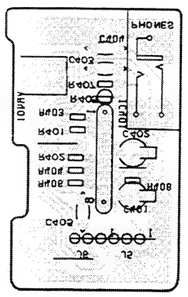
MAIN BOARD ASSEMBLY (PWZ1451)



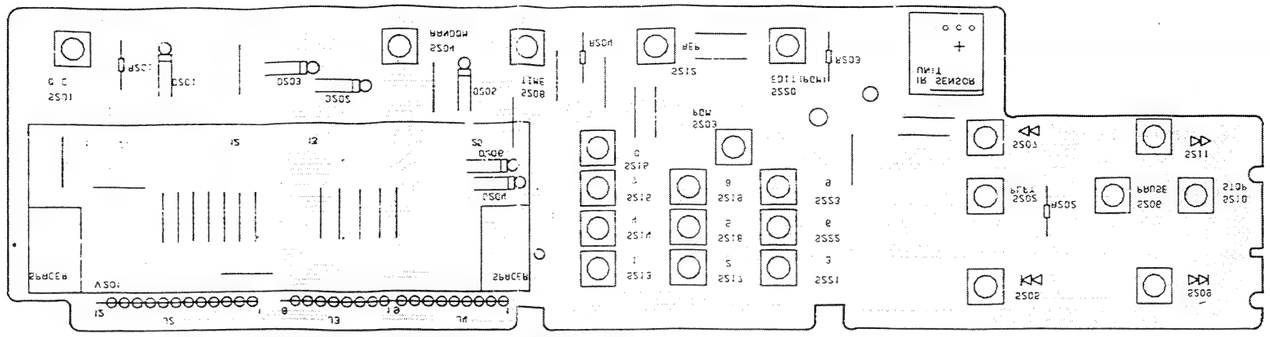
TRANSFORMER BOARD ASSEMBLY



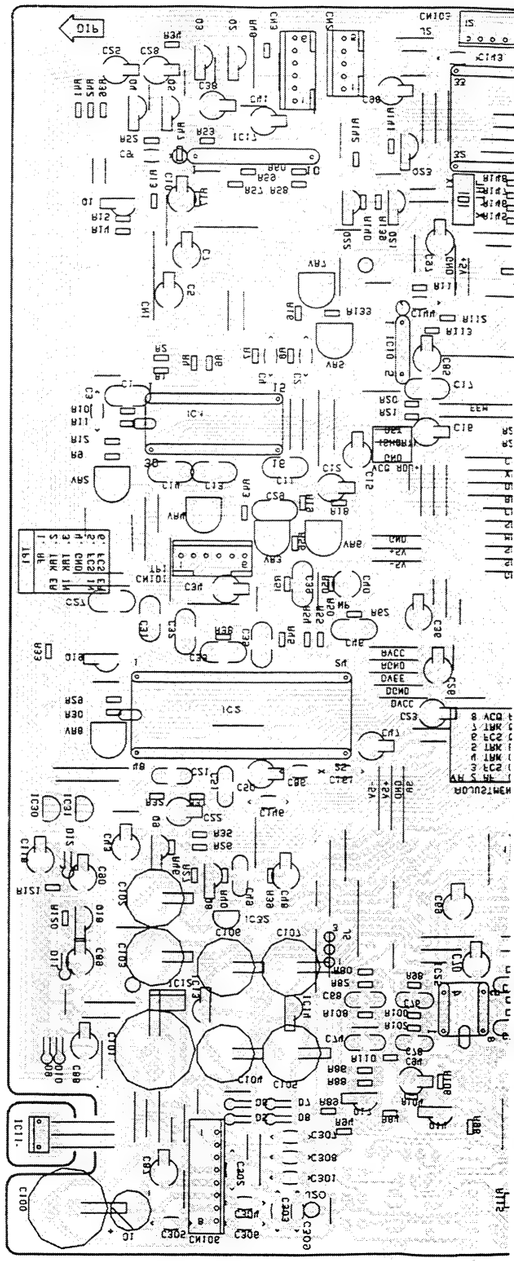
DAC BOARD ASSEMBLY



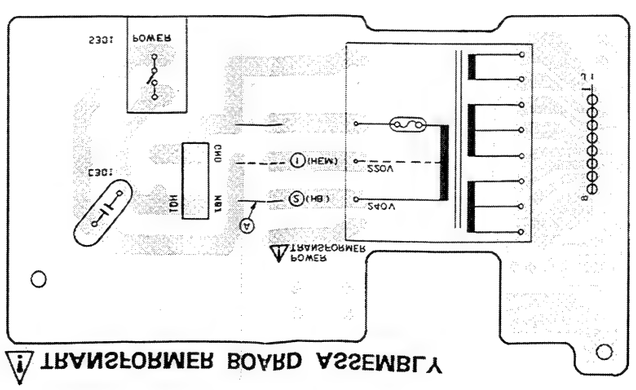
HEADPHONE BOARD ASSEMBLY



FUNCTION BOARD ASSEMBLY (PWZ1452)



MAIN BOARD ASSEMBLY (PWZ1451)



TRANSFORMER BOARD ASSEMBLY

This P.C.B. connection diagram is viewed from the foil side.

12. FOR PD – 4100/KU, KC, HEM AND HB TYPES

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
- 560 Ω → 56 × 10¹ → 561 ····· RD1/4PS 5 6 1 J
- 47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
- 0.5 Ω → 0R5 ····· RN2H 0 R 5 K
- 1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- 5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4SR 5 6 2 1 F

12.1 CONTRAST OF MISCELLANEOUS PARTS

The PD – 4100/KU, KC, HEM and HB types are the same as the PD – 5100/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		PD – 5100 /KU type	PD – 4100 /KU type	PD – 4100 /KC type	PD – 4100 /HEM type	PD – 4100 /HB type	
◉	Main board assembly	PWZ1419	PWZ1418	PWZ1418	PWZ1440	PWZ1440	
	Headphone board assembly	Non supply	·····	·····	·····	·····	
◉	Function board assembly	PWZ1425	PWZ1422	PWZ1422	PWZ1422	PWZ1422	
	Headphone knob	PAC1208	·····	·····	·····	·····	
	Button A	PAC1247	·····	·····	·····	·····	
	Button B	PAC1248	·····	·····	·····	·····	
	Button B (O/C)	PAC1250	·····	·····	·····	·····	
	Button A (O/C)	·····	PAC1245	PAC1245	PAC1245	PAC1245	
	Window B	PAM1175	·····	·····	·····	·····	
	Window A	·····	PAM1173	PAM1173	PAM1173	PAM1173	
	Connection cord with mini plug	·····	PDE-319	PDE-319	PDE-319	PDE-319	
	Packing case	PHG1179	PHG1178	PHG1193	PHG1193	PHG1193	For packing
	Name plate A (tray)	·····	PNW1352	PNW1352	·····	·····	
	Name plate B (tray)	PNW1358	·····	·····	PNW1358	PNW1358	
	Function panel A	·····	PNW1355	PNW1355	PNW1355	PNW1355	
	Function panel B	PNW1356	·····	·····	·····	·····	
	Insulator	PNW1376	·····	·····	·····	·····	
	Operating instructions (English)	PRB1045	PRB1044	·····	·····	PRB1044	
	Operating instructions (English/French)	·····	·····	PRE1054	PRE1054	·····	
	Operating instructions (Garman/Italian/Spanish /Portuguese/Swedish/Dutch)	·····	·····	·····	PRF1010	·····	
⚠ ★	Power transformer (AC120V)	PTT1054	PTT1046	PTT1046	·····	·····	
⚠ ★	Power transformer (AC220V/240V)	·····	·····	·····	PTT1065	PTT1065	
	Remote control unit	PWW1022	·····	·····	·····	·····	
	Foot assembly	·····	REC-369	REC-369	REC-369	REC-369	
⚠	Strain relief	CM-22C	CM-22C	CM-22C	CM-22B	CM-22B	
	FL filter A	PAM1230	PAM1230	PAM1230	·····	·····	
	FL filter C	·····	·····	·····	PAM1231	PAM1231	
⚠	AC power cord	PDG1015	PDG1015	PDG1015	PDG1008	PDG1009	

MAIN BOARD ASSEMBLY (PWZ1418 and PWZ1440)

The main board assembly (PWZ1418) and (PWZ1440) are the same as the main board assembly (PWZ1419) with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PWZ1419	PWZ1418	PWZ1440	
	C59	CEAS330M16	• • • • •	CEAS330M16	
	C61,C63	CQMA103K50	CKCYF103Z50	CKCYF103Z50	
	C81,C82	• • • • •	CCCCH300J50	• • • • •	
	C87	CEAS101M50	• • • • •	• • • • •	
	C89,C90	CEAS220M50	• • • • •	• • • • •	
	C65	CEAS101M10	• • • • •	• • • • •	
	C62	CEAS101M10	CEAS101M10	CEAS471M10	
	C91	• • • • •	CKCYF103Z50	CKCYF103Z50	
	C95,C96	CCCCH270J50	• • • • •	CCCCH270J50	
	C104,C105	CEAS102M25	• • • • •	• • • • •	
	C106,C107	CEAS471M16	• • • • •	• • • • •	
	C75,C76	CQMA561J50	CQMA471J50	CQMA471J50	
	C77,C78	CQMA681J50	CQMA821J50	CQMA821J50	
	C147	CKCYF103Z50	• • • • •	CKCYF103Z50	
	C119	• • • • •	CEAS220M50	CEAS220M50	
	C121,C122	CQSA102J50	CQMA102K50	CQMA102K50	
	C301 – C303	CKCYF103Z50	• • • • •	• • • • •	
★	D5 – D9	1SR139-100	• • • • •	• • • • •	
★	D11	MTZ27B (MTZ27C)	• • • • •	• • • • •	
★	D12	MTZ5.1B (MTZ5.1C)	• • • • •	• • • • •	
★	D17 – D19	• • • • •	1SS254	1SS254	
★★	IC18	LC7881-B	LC7881-C	LC7881-C	
★★	IC13	NJM78L12A	• • • • •	• • • • •	
★★	IC14	NJM79L12A	• • • • •	• • • • •	
★★	IC28	PD0034	• • • • •	PD0034	
★★	IC30 – IC32	• • • • •	• • • • •	ICP-N10	
★★	Q18	2SA1048	• • • • •	• • • • •	
★★	Q27	2SC1740S	• • • • •	• • • • •	
	R76	• • • • •	RD1/6PM471J	RD1/6PM271J	
	R105,R106	RD1/6PM511J	RD1/6PM102J	RD1/6PM102J	
	R115,R116	RD1/6PM511J	• • • • •	• • • • •	
	R117	• • • • •	RD1/6PM274J	RD1/6PM274J	
	R118	• • • • •	RD1/6PM102J	RD1/6PM102J	
	R120,R77	RD1/6PM222J	• • • • •	• • • • •	
	R121	RD1/6PM472J	RD1/6PM362J	RD1/6PM362J	
	R127,R128	RD1/6PM223J	• • • • •	• • • • •	
	R153	• • • • •	RD1/6PM362J	RD1/6PM362J	
	R154	• • • • •	RD1/6PM391J	RD1/6PM391J	
	R69	RD1/6PM221J	• • • • •	RD1/6PM221J	
	R97,R98	RD1/6PM752J	RD1/6PM822J	RD1/6PM822J	
	R101,R102	RD1/6PM752J	RD1/6PM472J	RD1/6PM472J	
	R109,R110	RD1/6PM103J	RD1/6PM822J	RD1/6PM822J	
	R134	RD1/6PM391J	• • • • •	RD1/6PM391J	
★	X2 Crystal resonator	• • • • •	PSS-012	• • • • •	
★	X3 Crystal resonator	PSS-012	• • • • •	PSS-012	

FUNCTION BOARD ASSEMBLY (PWZ1422)

The function board assembly (PWZ1422) is the same as the function board assembly (PWZ1425) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ1425	PWZ1422	
★	D204 – D206	1SS254	• • • • •	
★★	S203,S213 – S219,S221 – S223 Tact switch	PSG-065	• • • • •	
★	V201 Fluorescent indicator tube	PEL1019	PEL1018	
	IR sensor unit	GP1U50V	• • • • •	
	R205	• • • • •	RD1/6PM222J	

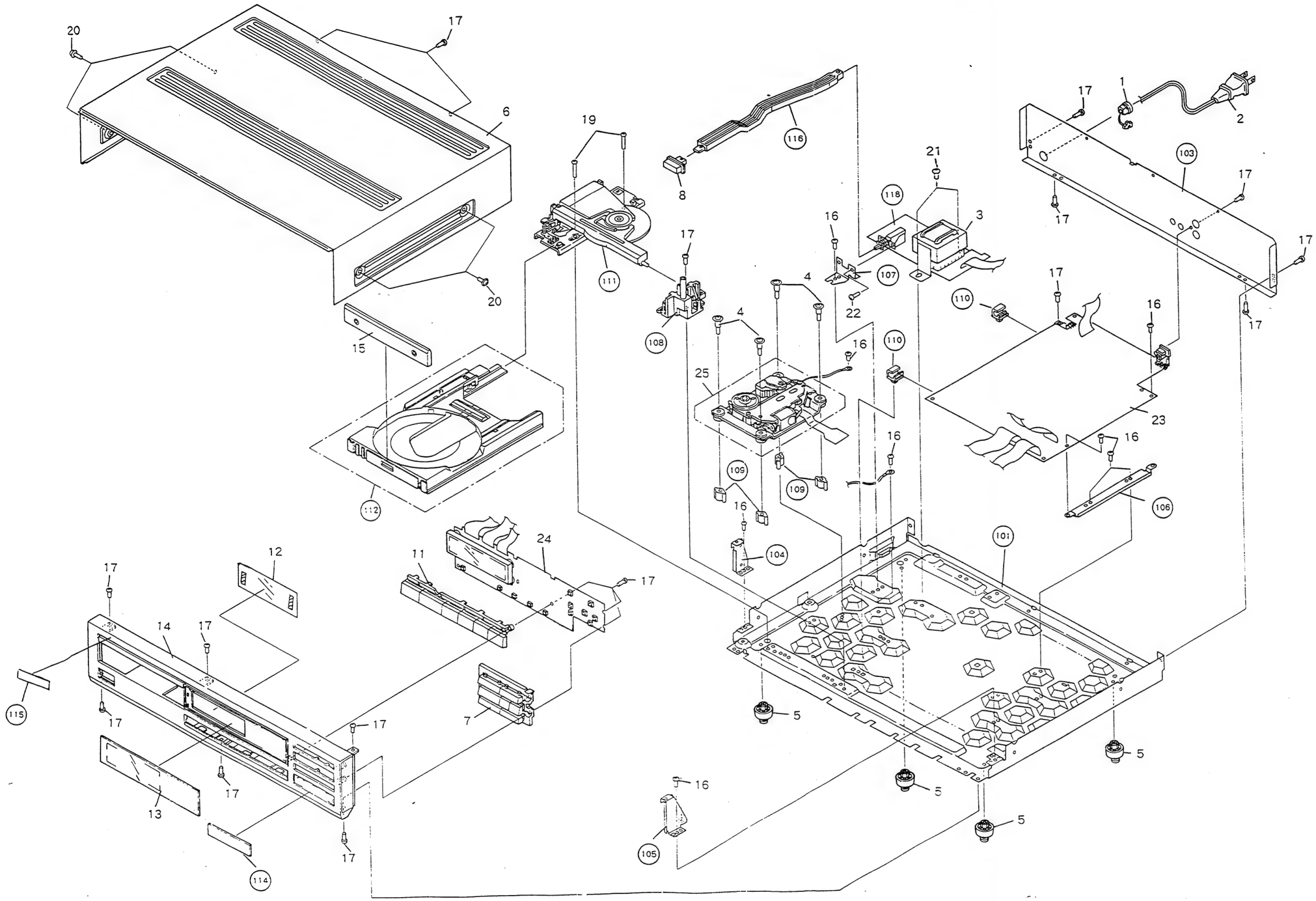
12.2 EXPLODED VIEWS AND PARTS LIST

NOTES :

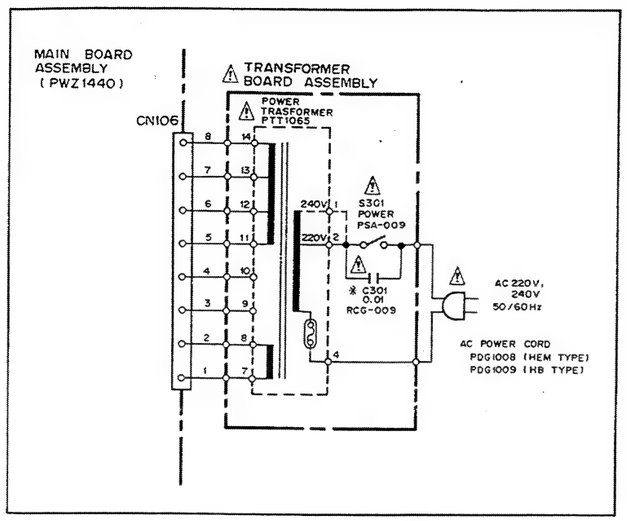
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The mechanism section is the same as the PD – 5100/KU type, please refer to pages 12 – 14.

Parts List of Exterior

Mark	No.	Part No.	Description
⚠	1	CM-22C	Strain relief
⚠	2	PDG1015	AC power cord
⚠ ★	3	PTT1046	Power transformer (AC120V)
	4	PBA1001	Screw
	5	REC-369	Foot assembly
	6	PYY1062	Bonnet
	7	PAC1244	Button A (PLAY)
	8	PAC1246	Button A (POWER)
	9		• • • • •
	10		• • • • •
	11	PAC1245	Button A (O/C)
	12	PAM1230	FL filter A
	13	PAM1173	Window A
	14	PNW1355	Function panel A
	15	PNW1352	Name plate A (tray)
	16	BBZ30P060FMC	Screw
	17	BBZ30P080FZK	Screw
	18	BBZ30P120FMC	Screw
	19	BBZ30P230FMC	Screw
	20	FBT40P080FZK	Screw
	21	IBZ40P080FCC	Screw
	22	PMZ30P060FCU	Screw
◉	23	PWZ1418	Main board assembly
◉	24	PWZ1422	Function board assebmly
	25	PYY1063	Servo mechanism assembly
	101		Under base
	102		• • • • •
	103		Rear base
	104		Angle
	105		Panel angle
	106		Board angle
	107		Switch angle
	108		Slide guide
	109		Mechanism support
	110		P.Plate holder
	111		Loading base assembly
	112		Tray assembly
	113		• • • • •
	114		Headphone name plate
	115		Name plate
	116		SW joint
	117		• • • • •
	118		Transformer board assembly



12.3 SCHEMATIC DIAGRAM FOR HEM AND HB TYPES

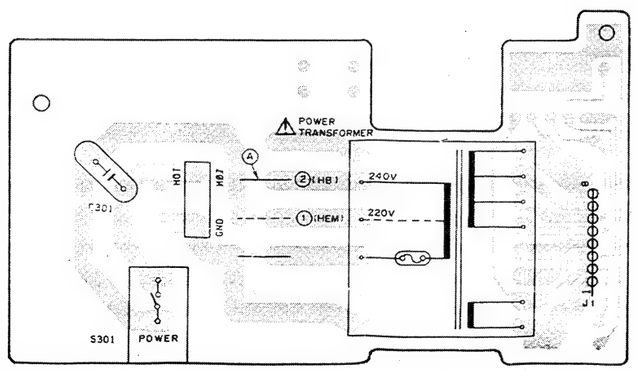


12.4 LINE VOLTAGE SELECTION FOR HEM AND HB TYPES

1. Disconnect the AC power cord
2. Remove the bonnet.
3. Change the position of the jumper Ⓐ as follows

Voltage	Jumper Ⓐ position
220V	①
240V	②

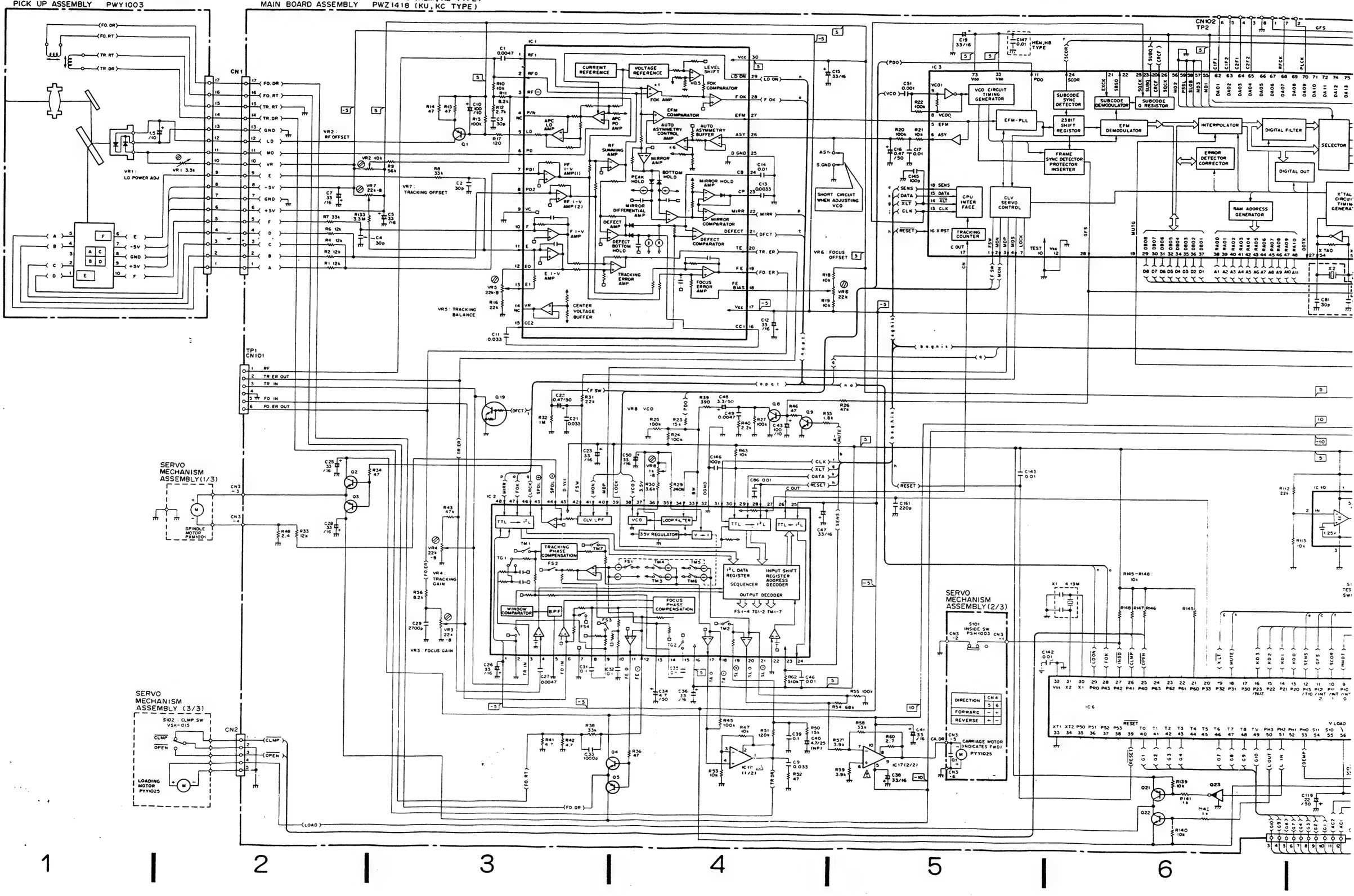
TRANSFORMER BOARD ASSEMBLY

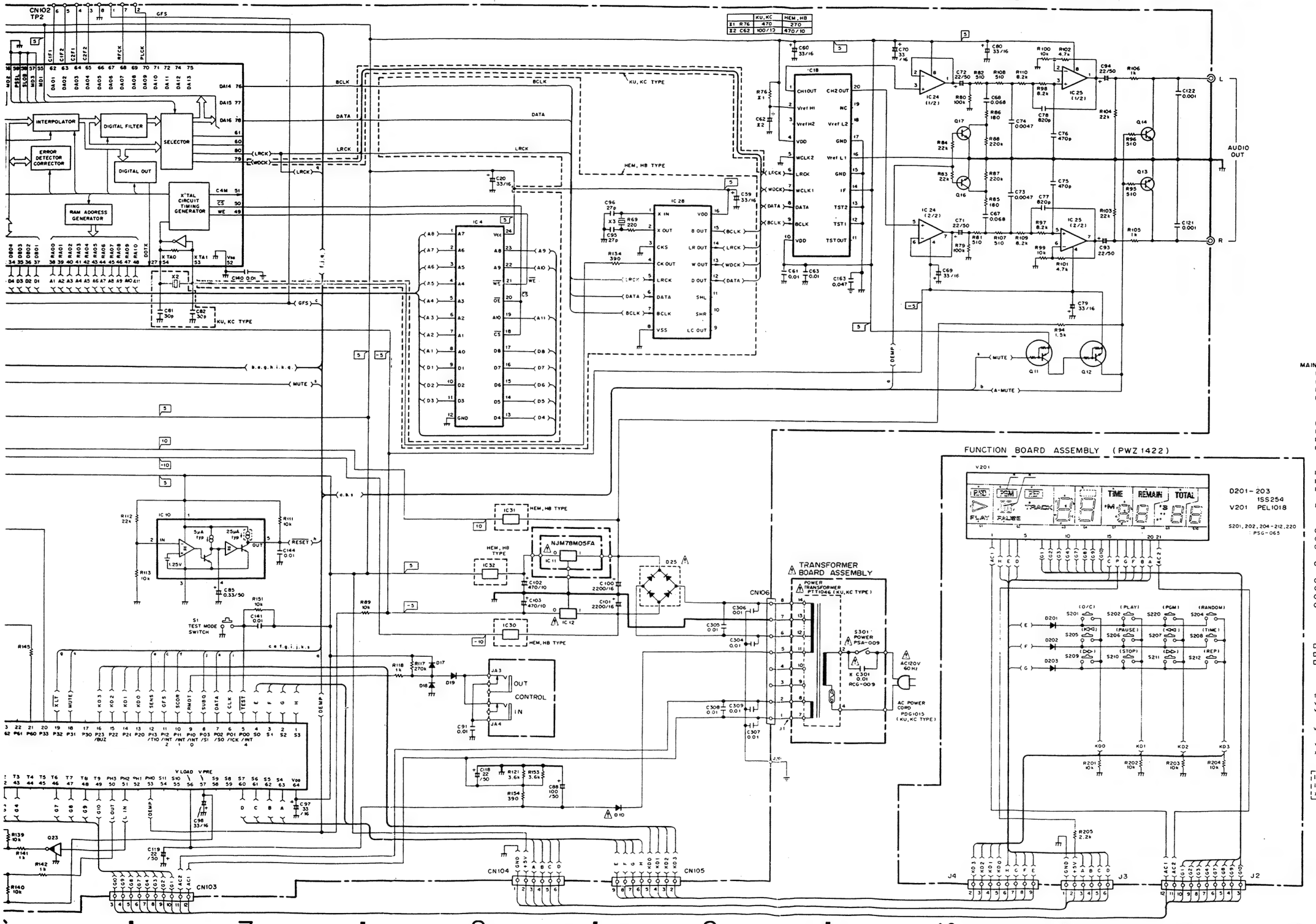


12.5 SCHEMATIC DIAGRAM

PICK UP ASSEMBLY PWY1003

MAIN BOARD ASSEMBLY PWZ1440 (HEM, HB TYPE) PWZ1418 (KU, KC TYPE)





	KU, KC	HEM, HB
Σ1 R76	470	270
Σ2 C62	100/13	470/10

MAIN BOARD ASSEMBLY

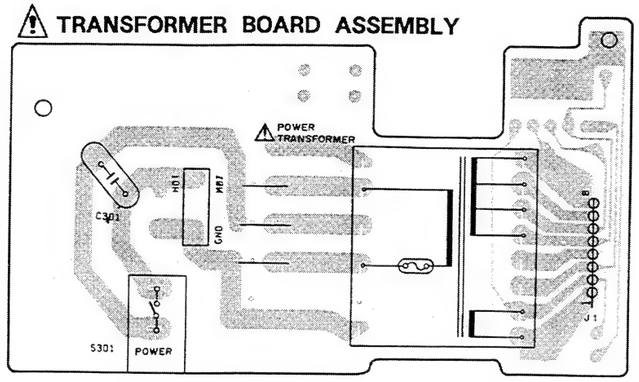
IC 1	CXA1081S
IC 2	CXA1082AS
IC 3	CXD1135Q2
IC 4	CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
IC 6	PD4151B
IC 10	M51957AL
IC 11	NJM78M05FA
IC 12	NJM79M05FA
IC 17	TA8410K
IC 18	LC7881-C
IC 24, 25	M5218P
IC 28	PD0034
Q1, 3, 5	2SA1399
Q2, 4	2SC3581
Q8, 9, 16, 17	2SC1740S
Q11	DTA124ES
Q12, 19, 24	DTC124ES
Q13, 14	2SD1302
Q21	2SA854S
Q22	2SC1741S
D10	1SR139-100
D17-19	1SS254
D25	WL02-5004-L
S1	PSG-065
VR2	VRTB6VS103
VR3 – VR7	VRTB6VS223
VR8	VRTS6VS102
X1	VSS1014
X2	PSS-012 (KU, KC TYPE)

IC28 PD0034
IC30-32 ICP-N10
X3 PSS-012
HEM, HB TYPE

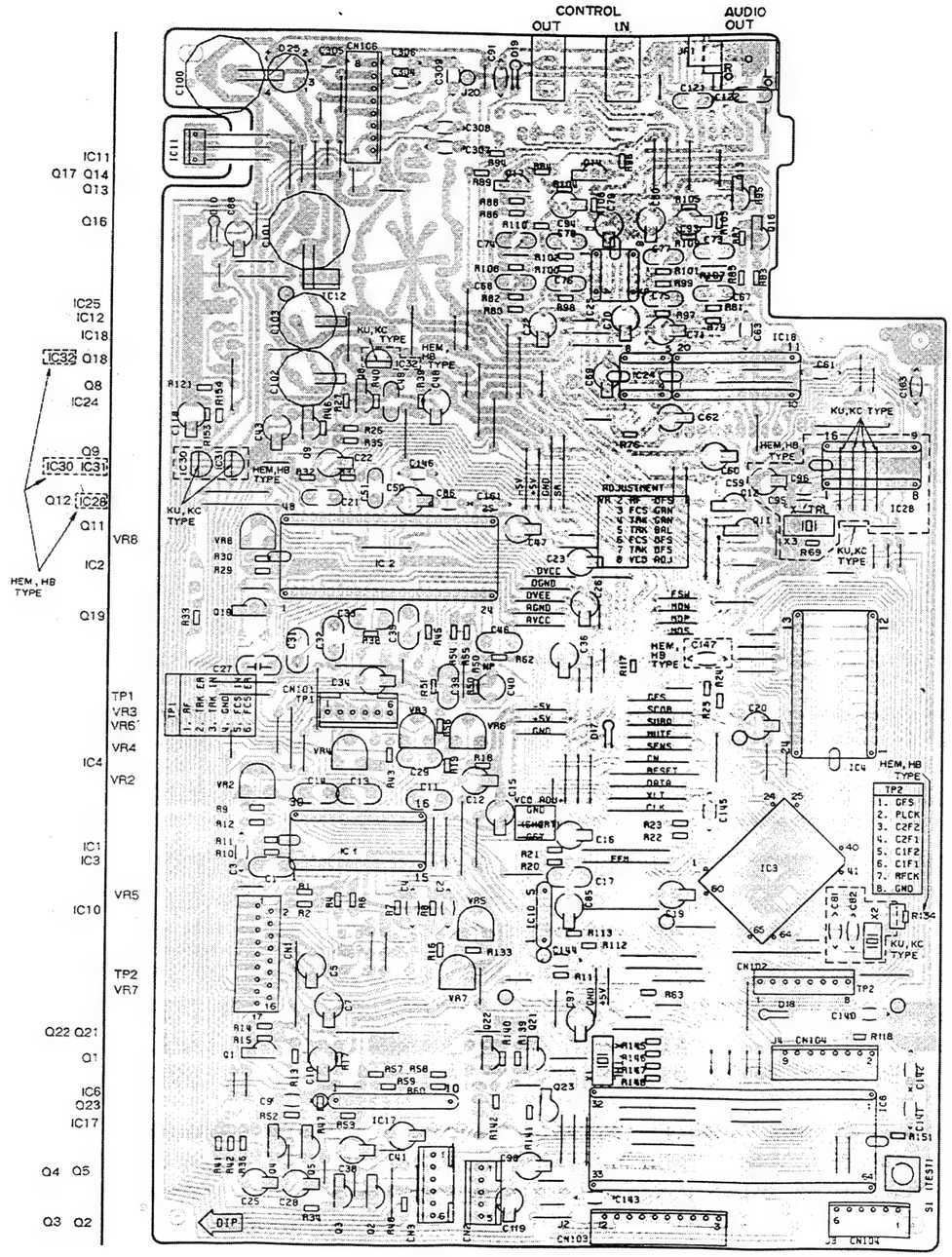
12.6 P.C. BOARD PATTERN

P.C. Boards Pattern of PD – 4100/KU, KC, HEM, HB types are the same connections as the PD – 5100/KU type.
Refer to PD – 5100/KU type.

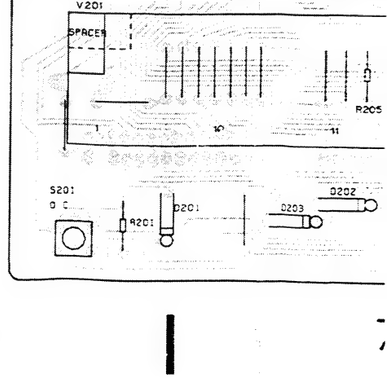
⚠ TRANSFORMER BOARD ASSEMBLY



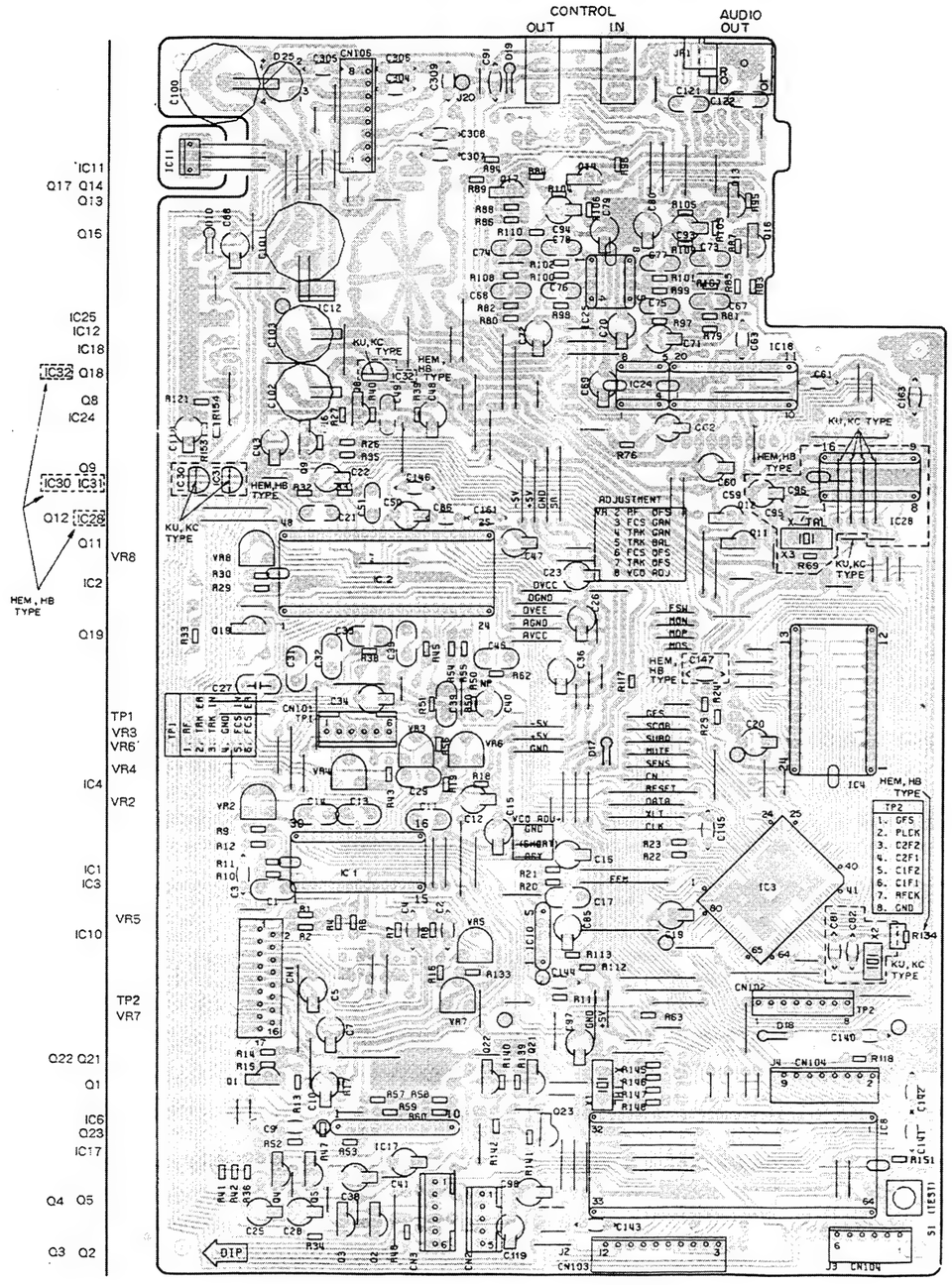
MAIN BOARD ASSEMBLY (PWZ1418) FOR KU, KC types
MAIN BOARD ASSEMBLY (PWZ1440) FOR HEM, HB types



FUNCTION BOARD ASSEM



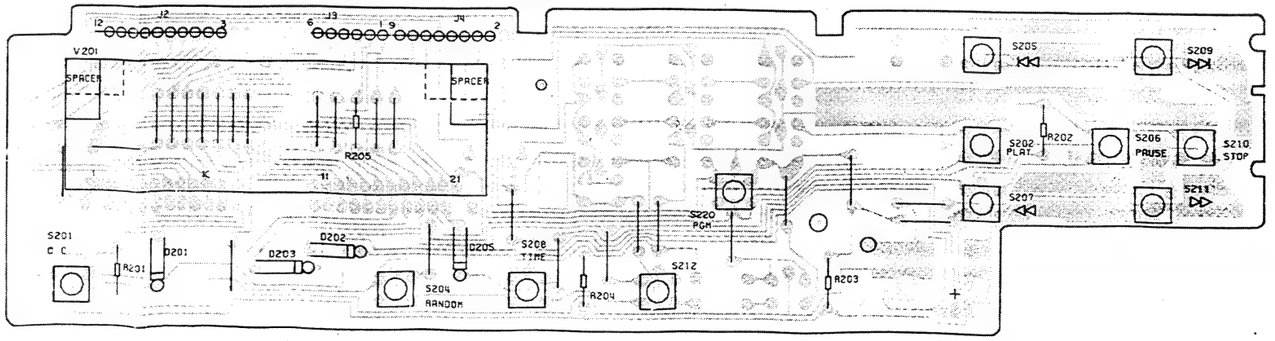
MAIN BOARD ASSEMBLY (PWZ1418) FOR KU, KC types
MAIN BOARD ASSEMBLY (PWZ1440) FOR HEM, HB types



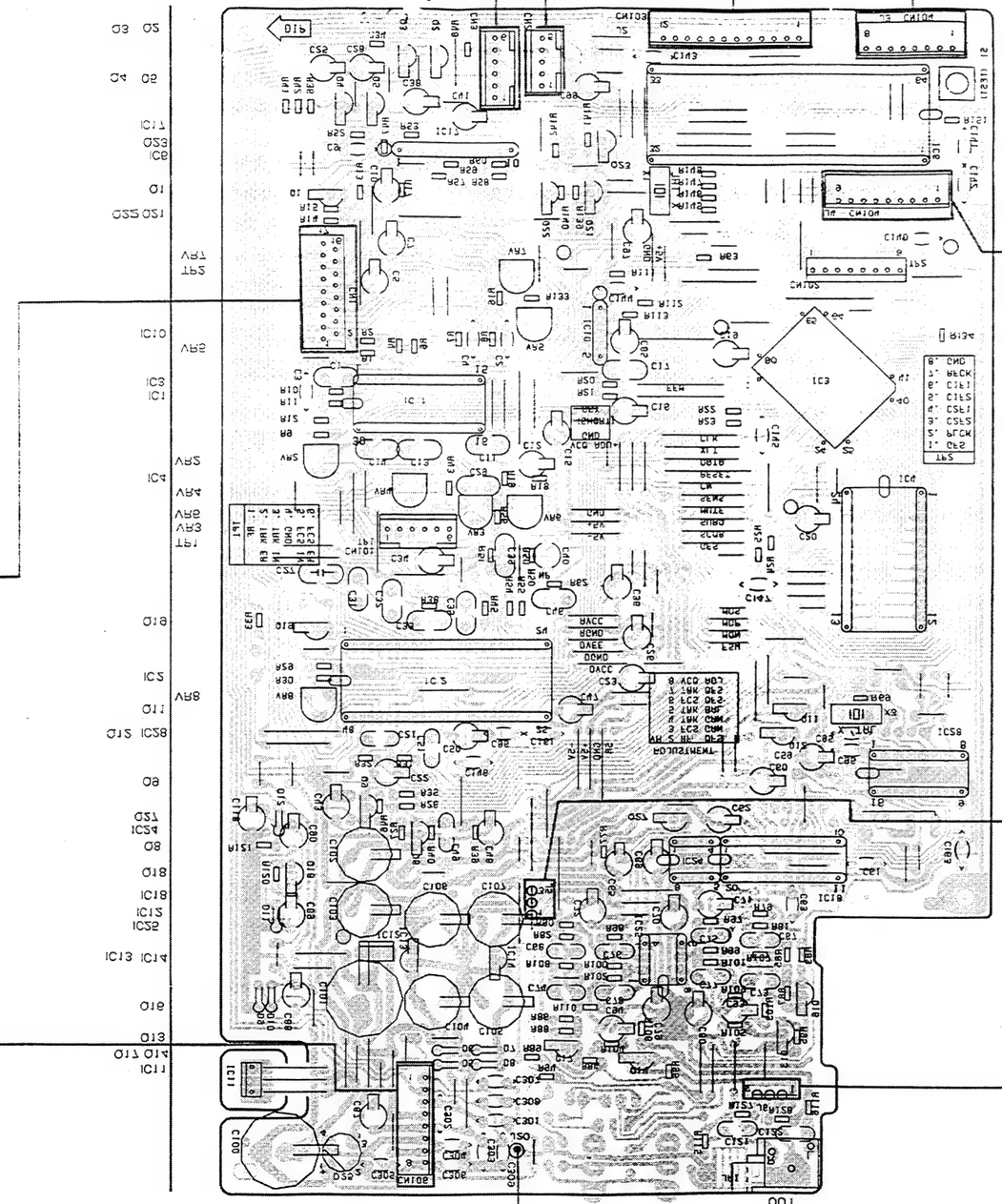
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or	Transistor			Ceramic capacitor
					Mylar capacitor
D S G	or	FET	SIL		Styrol capacitor
			SIL		
		Diode	MP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
					Resistor
		Coil	~		
		Transformer			Resonator
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

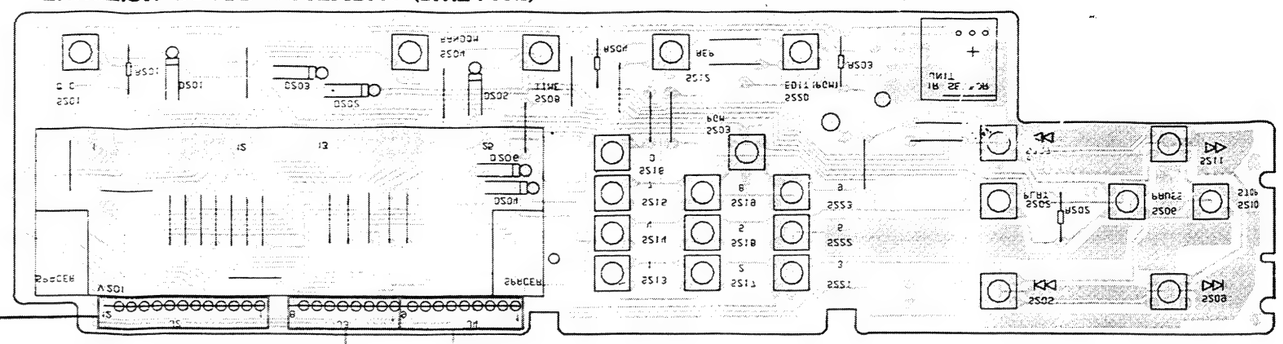
FUNCTION BOARD ASSEMBLY (PWZ1422)



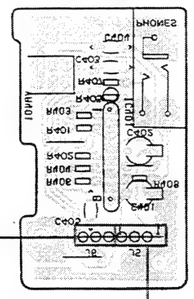
MAIN BOARD ASSEMBLY (PWZ1P1ZW)



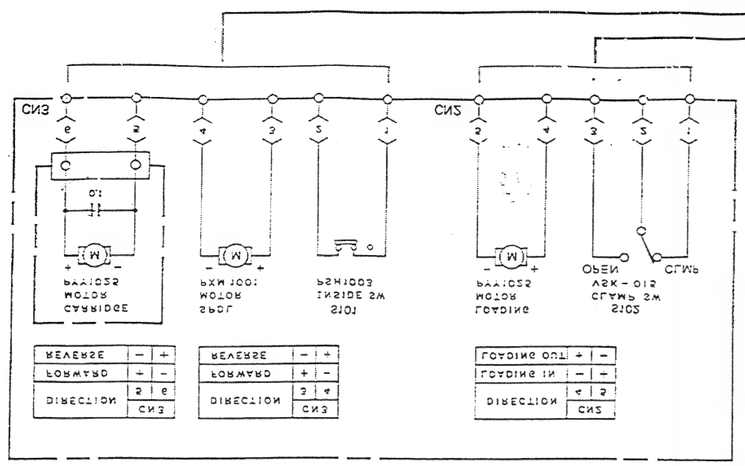
FUNCTION BOARD ASSEMBLY (PWZ1A2Z)



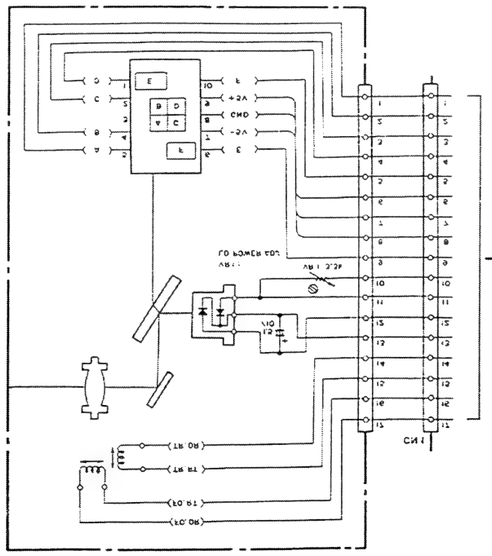
HEADPHONE ASSEMBLY BOARD



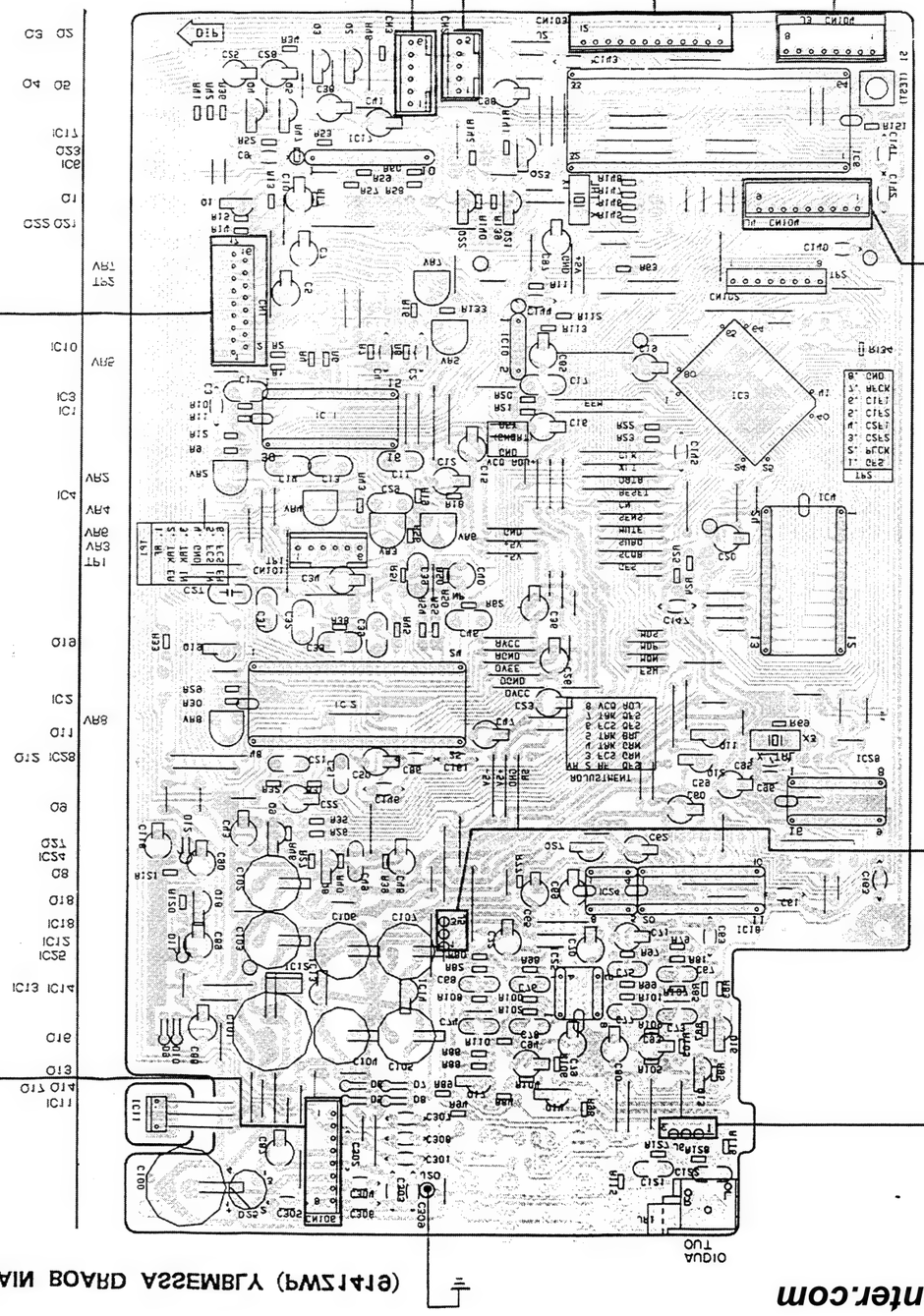
This P.C.B. connection diagram is viewed from the foil side.



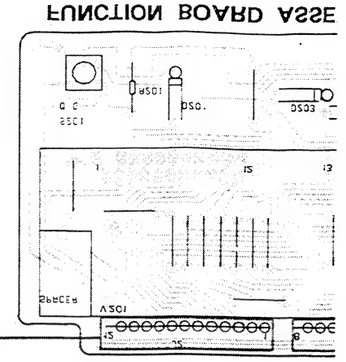
SERVO MECHANISM ASSEMBLY



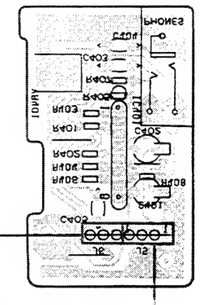
PICK-UP ASSEMBLY (PWY1003)



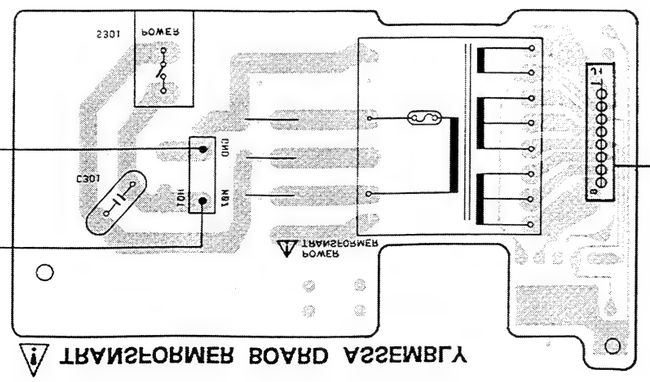
MAIN BOARD ASSEMBLY (PWZ1471)



FUNCTION BOARD ASSE



ASSEMBLY BOARD HEADPHONE



TRANSFORMER BOARD ASSEMBLY

13. FOR PD – 5100 – S/HEM, PD – 4100 – S/HEM AND HB TYPES

NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

13.1 CONTRAST OF MISCELLANEOUS PARTS

● FOR PD – 5100 – S/HEM TYPE

The PD – 5100 – S/HEM type is the same as the PD – 5100/HEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PD – 5100/HEM type	PD – 5100 – S/HEM type	
	Headphone knob	PAC1208	PAC1271	
	Button A (PLAY)	PAC1244	PAC1279	
	Button A (POWER)	PAC1246	PAC1281	
	Button A	PAC1247	PAC1282	
	Button B	PAC1248	PAC1283	
	Button B (O/C)	PAC1250	PAC1284	
	Packing case	PHG1194	PHG1204	For packing
	Function panel B	PNW1356	PNW1379	
	Name plate B (tray)	PNW1358	PNW1398	
	Bonnet	PYY1062	PYY1068	
	Headphone name plate	Non supply	Non supply	
	Earth plate	• • • • •	Non supply	

13.2 CONTRAST OF MISCELLANEOUS PARTS FOR PD-4100-S/HEM AND HB TYPES

The PD-4100-S/HEM and HB types are as same as the PD-4100/HEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PD-4100 /HEM type	PD-4100-S /HEM type	PD-4100-S /HB type	
	Button A (PLAY)	PAC1244	PAC1279	PAC1279	
	Button A (O/C)	PAC1245	PAC1280	PAC1280	
	Button A (POWER)	PAC1246	PAC1281	PAC1281	
	Window A	PAM1173	PAM1218	PAM1218	
	Packing case	PHG1193	PHG1207	PHG1207	
	Function panel A	PNW1355	PNW1377	PNW1377	
	Name plate B (tray)	PNW1358	PNW1398	PNW1398	
⚠	AC power cord	PDG1008	PDG1008	PDG1009	
	Operating instructions (English)	• • • • •	• • • • •	PRB1044	
	Operating instructions (English/French)	PRE1054	PRE1054	• • • • •	
	Operating instructions (German/Italian/Spanish, Dutch/Portuguese/Swedish)	PRF1010	PRF1010	• • • • •	
	Headphone name plate	Non supply	Non supply	Non supply	
	Earth plate	• • • • •	Non supply	Non supply	
	Bonnet	PYY1062	PYY1068	PYY1068	

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
   ▭ ; DC voltage (V) at no input signal.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

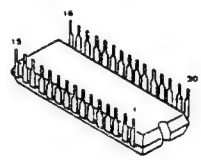
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch positio
   MAIN BOARD ASSEMBLY
   S1 : TEST MODE
   FUNCTION BOARD ASSEMBLY
   S201 : OPEN/CLOSE
   S202 : PLAY
   S203 : PROGRAM MEMORY
   S204 : RANDOM PLAY
   S205 : TRACK SEARCH (⏮)
   S206 : PAUSE
   S207 : MANUAL SEARCH (◀◀)
   S208 : TIME
   S209 : TRACK SEARCH (▶▶⏭)
   S210 : STOP
   S211 : MANUAL SEARCH (▶▶)
   S212 : REPEAT
   S213 : 1 ┐
   S214 : 4 │
   S215 : 7 │
   S216 : 0 │ (TRACK NO.)
   S217 : 2 │
   S218 : 5 │
   S219 : 8 ┘
   S220 : EDIT
   S221 : 3 ┐
   S222 : 6 │ (TRACK NO.)
   S223 : 9 ┘
   TRANSFORMER BOARD ASSEMBLY
   S301 : POWER ON – OFF
   MISCELLANEOUS
   S101 : INSIDE
   S102 : CLAMP OPEN – CLAMP

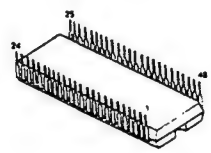
External appearance of transistors and ICs

2SC3732

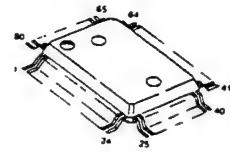
CXA1081S



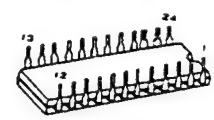
CXA1082AS



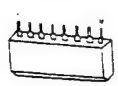
CXD1135QZ



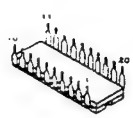
CXK5816PN – 12L
CXK5816PN – 15L
LH5116 – 15



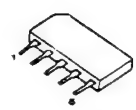
M5218L



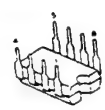
LC7881 – B
LC7881 – C



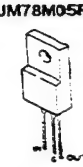
M51957AL



M5218P



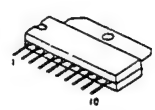
NJM78M05FA



ICP – N10

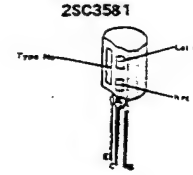
NJM79M05FA

TA8410K

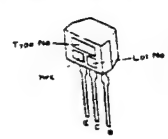


DTA124ES
DTC124ES

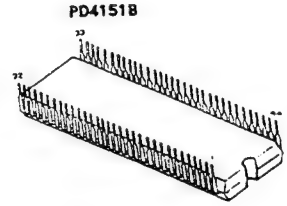
2SA1399
2SC3581



2SC1741S
2SC1740S



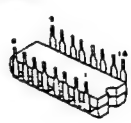
PD4151B



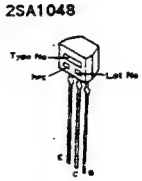
2SA854S

2SD1302

PCM56P
PD0034



2SA1048



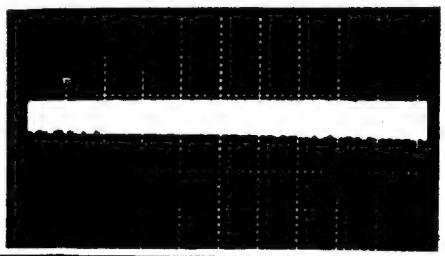
NJM79L12A

NJM78L12A

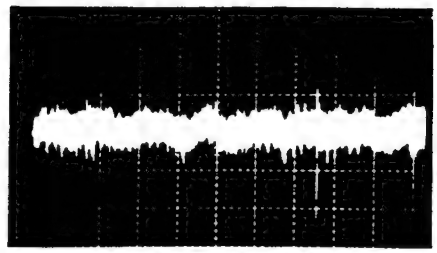
WAVE FORMS

NOTE: The encircled numbers denote measuring points in the circuit and pattern diagrams.

① CN1-5 Pin: PLAY MODE
100mV/Div 5m sec/Div

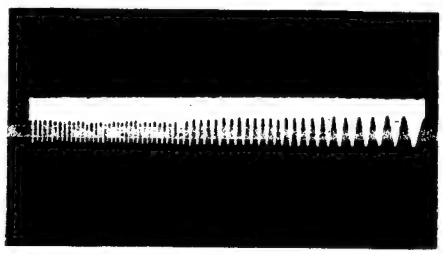


③ TP1-6 Pin: SEARCH MODE
500mV/Div 10mS/Div

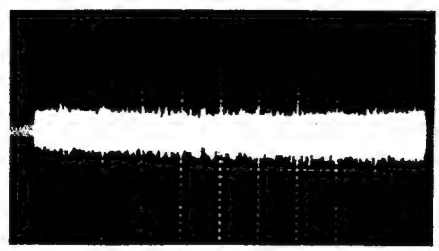


⑥ IC17-1 : PLAY MODE
2V/Div 10mS/Div

① CN1-5 Pin: SEARCH MODE
100mV/Div 5m sec/Div

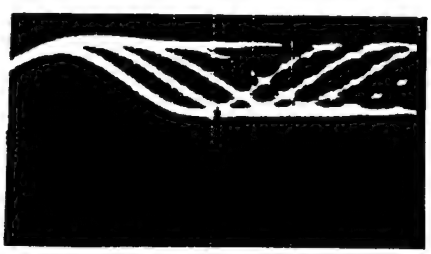


④ TP1-2 Pin: PLAY MODE
1V/Div 10mS/Div

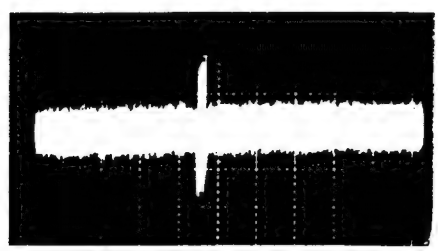


⑥ IC17-1 : SEARCH MODE
2V/Div 10mS/Div

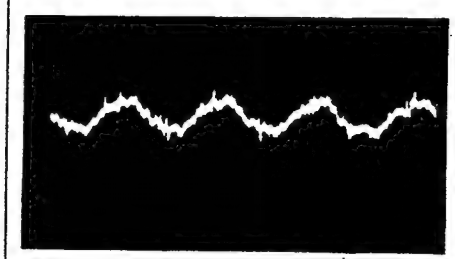
② TP1-1 Pin: PLAY MODE
1V/Div 200n sec/Div



④ TP1-2 Pin: SEARCH MODE
1V/Div 10mS/Div

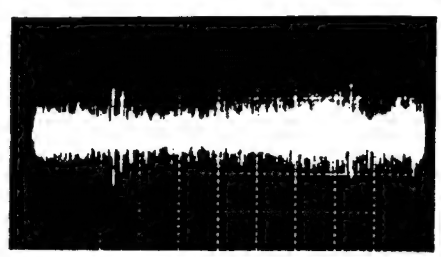


⑦ Q2 Emitter : PLAY MODE
2V/Div 50mS/Div

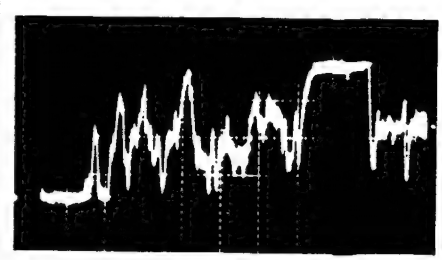


② TP1-1 Pin: SEARCH MODE
500mV/Div 5m sec/Div

⑤ Q4 Emitter: PLAY MODE
2V/Div 10mS/Div



⑦ Q2 Emitter : SEARCH MODE
2V/Div 100mS/Div

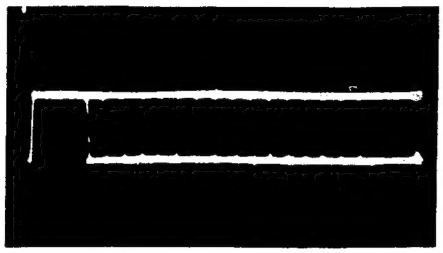


③ TP1-6 Pin: PLAY MODE
500mV/Div 10m sec/Div

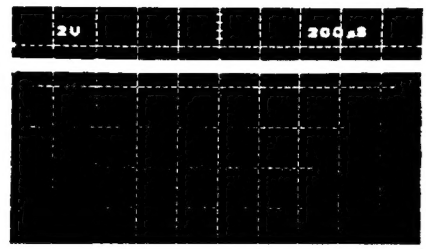
⑤ Q4 Emitter : SEARCH MODE
2V/Div 10mS/Div

⑧ IC2, 34 Pin: PLAY MODE
2V/Div 10mS/Div

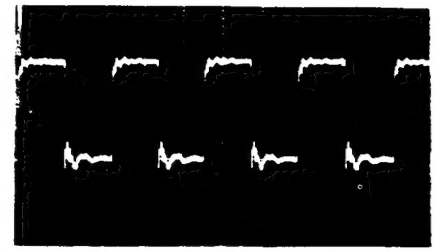
⑨ IC1 27 Pin: PLAY MODE
2V/Div 500n sec/Div



⑫ TP2-1: PLAY MODE
2V/Div 200μS/Div

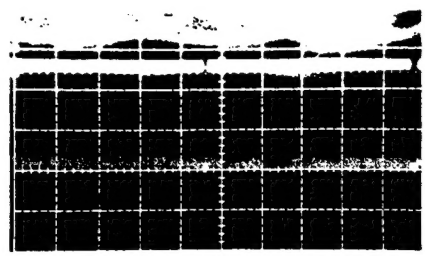


⑯ IC3-76: STOP MODE
2V/Div 200nS/Div

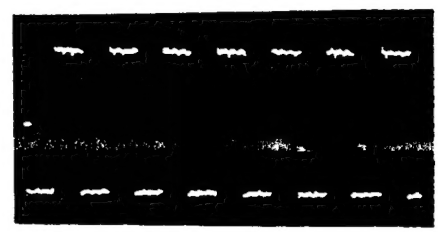


⑩ IC3-4: PLAY MODE
2V/Div 50μS/Div

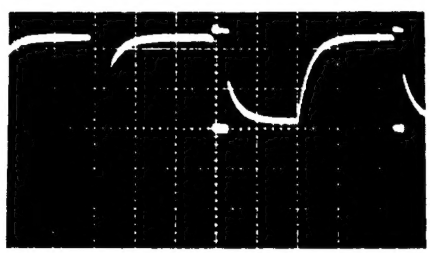
⑫ TP2-1: SEARCH MODE
2V/Div 20mS/Div



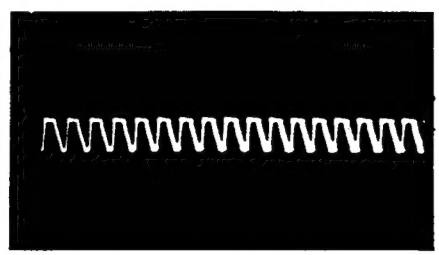
⑰ IC28-13 : STOP MODE
200mV/Div 3μS/Div



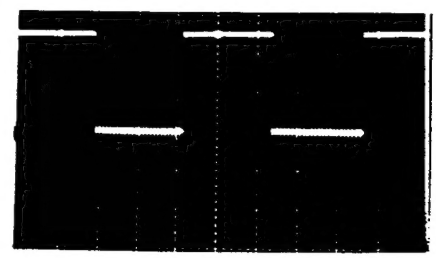
⑩ IC3-4: SEARCH MODE
2V/Div 100mS/Div



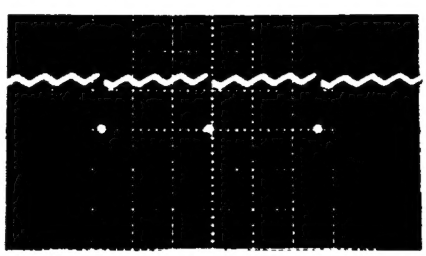
⑬ IC2-38: PLAY MODE
2V/Div 200μS/Div



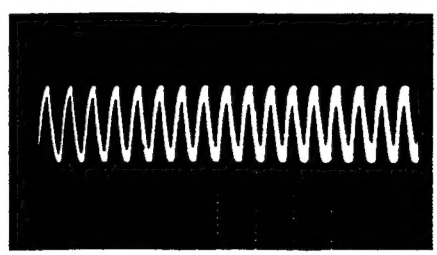
⑱ IC3-80: STOP MODE
2V/Div 5μS/Div



⑪ IC3-3: PLAY MODE
2V/Div 200μS/Div

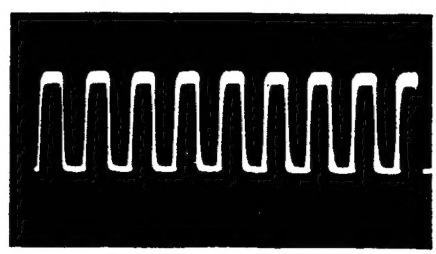


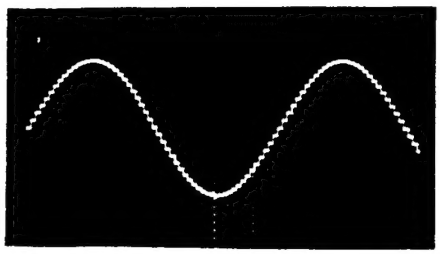
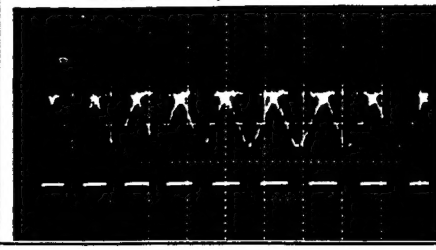
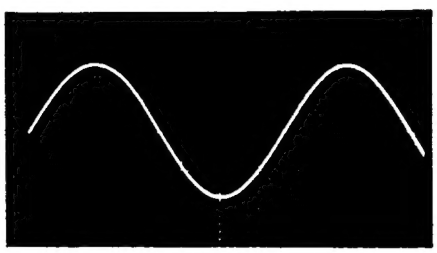
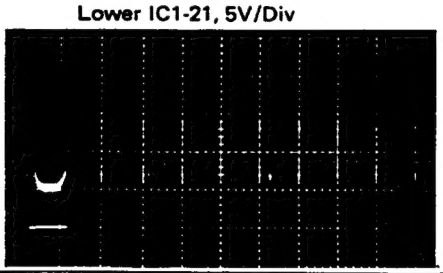
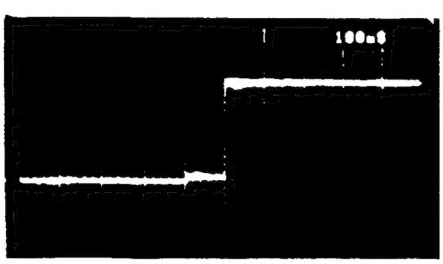
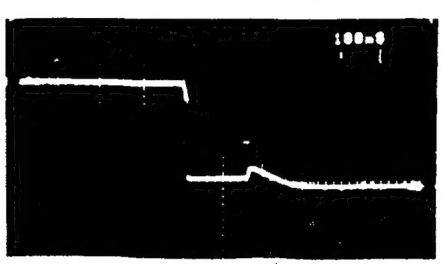
⑭ IC3-8: PLAY MODE
2V/Div 200μS/Div



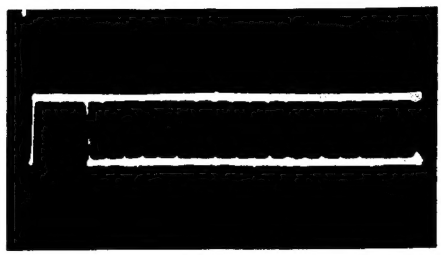
⑪ IC3-3: SEARCH MODE
2V/Div 10mS/Div

⑮ TP2-2: PLAY MODE
2V/Div 200μS/Div

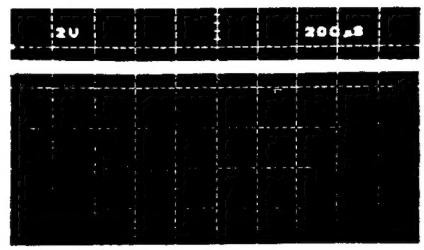


⑲ IC18-1 : PLAY MODE 2V/Div 50μS/Div 	㉓ IC1-22: TR OPEN 1mS/Div Upper TP1-1, 1V/Div Lower IC1-22, 2V/Div 	
⑳ OUTPUT Lch: PLAY MODE 2V/Div 50μS/Div 		
㉑ IC1-21: DFCT 1mS/Div Upper TP1-1, 1V/Div Lower IC1-21, 5V/Div 		
㉒ IC10-5: POWER ON 2V/Div 100mS/Div 		
㉒ IC10-5: POWER-OFF 2V/Div 100mS/Div 		

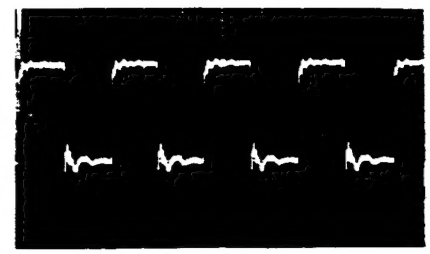
⑨ IC1 27 Pin: PLAY MODE
2V/Div 500n sec/Div



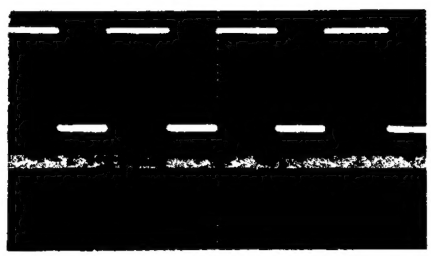
⑫ TP2-1: PLAY MODE
2V/Div 200μS/Div



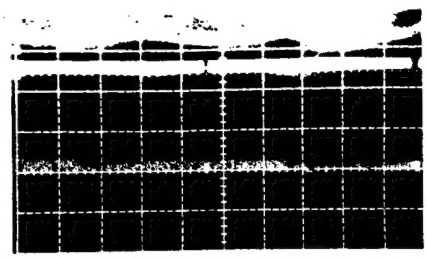
⑯ IC3-76: STOP MODE
2V/Div 200nS/Div



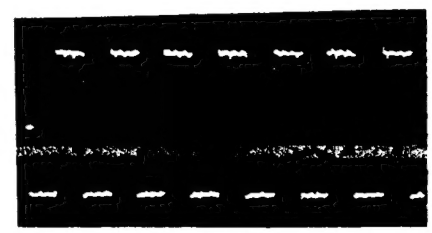
⑩ IC3-4: PLAY MODE
2V/Div 50μS/Div



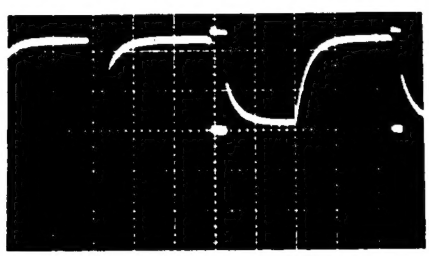
⑫ TP2-1: SEARCH MODE
2V/Div 20mS/Div



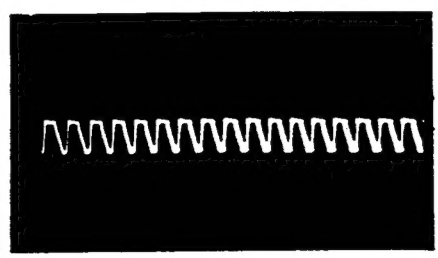
⑰ IC28-13 : STOP MODE
200mV/Div 3μS/Div



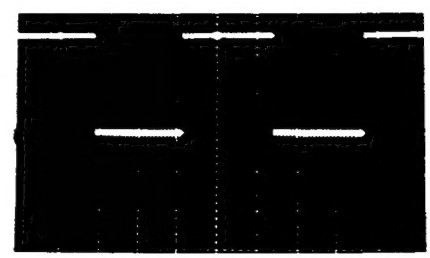
⑩ IC3-4: SEARCH MODE
2V/Div 100mS/Div



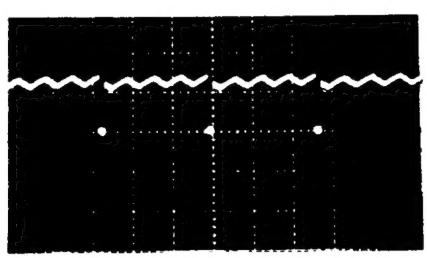
⑬ IC2-38: PLAY MODE
2V/Div 200μS/Div



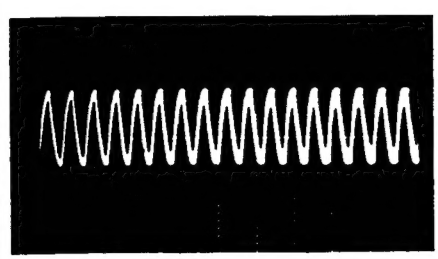
⑱ IC3-80: STOP MODE
2V/Div 5μS/Div



⑪ IC3-3: PLAY MODE
2V/Div 200μS/Div

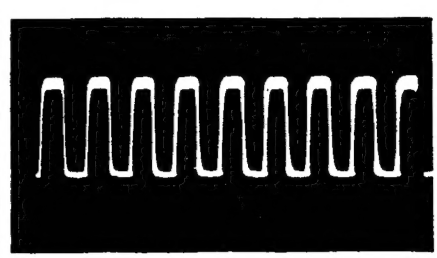


⑭ IC3-8: PLAY MODE
2V/Div 200μS/Div

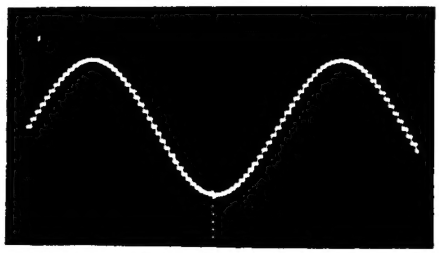


⑪ IC3-3: SEARCH MODE
2V/Div 10mS/Div

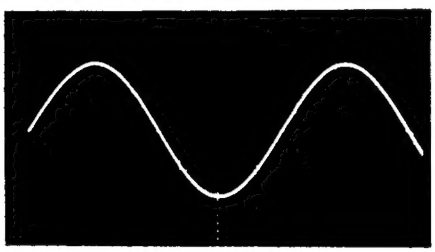
⑮ TP2-2: PLAY MODE
2V/Div 200μS/Div



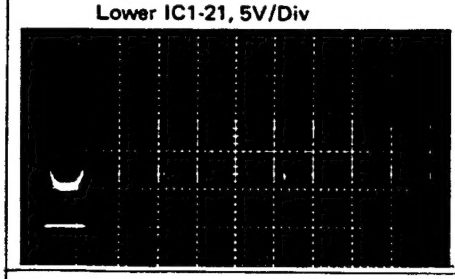
⑲ IC18-1 : PLAY MODE
2V/Div 50μS/Div



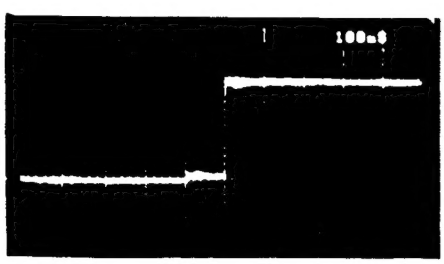
⑳ OUTPUT Lch: PLAY MODE
2V/Div 50μS/Div



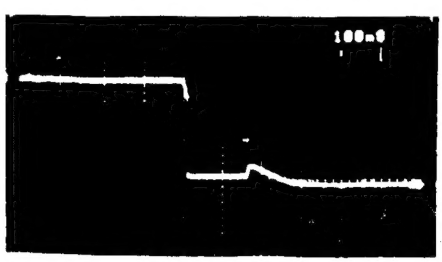
㉑ IC1-21: DFCT
1mS/Div
Upper TP1-1, 1V/Div
Lower IC1-21, 5V/Div



㉒ IC10-5: POWER ON
2V/Div 100mS/Div



㉒ IC10-5: POWER-OFF
2V/Div 100mS/Div



㉓ IC1-22: TR OPEN
1mS/Div
Upper TP1-1, 1V/Div
Lower IC1-22, 2V/Div